



THE AUSTRALIAN

garden journal

OFFICIAL JOURNAL OF THE AUSTRALIAN GARDEN HISTORY SOCIETY

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Sold by subscription \$15.00 per year



Vol. 4 No. 6

AUGUST 1985

Registered by Australia Post : publication no. NBQ4824

The Australian Garden Journal is published six times a year, in February, April, June, August, October and December.

It is the official journal of the Australian Garden History Society and as such is distributed free to all members of that Society.

To non-members of the Society the subscription is \$15.00 per year, which includes postage. Overseas subscription rates are available on request.

Single copies are available for \$2.50 each, including postage. Back issues are also available as under:

1981 (3 issues) - 50c 1982 (12 issues) - 50c
1983 (7 issues) - \$1.00 1984 on (6 per year) - \$1.50

Contributions are invited from all those who have an interest in gardens and gardening, as art or as science. Opinions expressed by contributors are not necessarily those of the Australian Garden History Society or the publishers.

The Australian Garden Journal is published by Tim and Keva North, P.O. Box 588, Bowral, N.S.W. 2576. Telephone (048) 61-1884.

Typesetting by David Graphic Sales, 9-19 Nickson Street, Surry Hills, N.S.W. 2010.

Printing by Shepson Printing (Letterpress and Offset) Pty. Ltd., P.O. Box 543, Darlinghurst, N.S.W. 2010.

Colour separations by Photomat Scanagraphics, P.O. Box 494, Darlinghurst, 2010.

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Registered with Australia Post for posting as a publication category B: no. NBQ 4824.

ISSN No. 0812.9495.

Front Cover:

The Flecker Botanic Garden,
Cairns, Queensland.

(photo: Keva North)

Contents

Another Step Forward	page 147
Profile	page 148
Design Concepts of Australia's Newest Sub-tropical Botanic Garden	page 148
Tea growing in Australia	page 151
The Flecker Botanic Gardens, Cairns	page 154
North Queensland Rainforest Trees	page 157
A Zoo provides Sanctuary for Rare and Endangered Species	page 160
Spring in the Royal Botanic Gardens, Sydney	page 161
Protection of a Living Heritage - the Notable and Historic Trees Scheme of New Zealand	page 162
Measuring Trees	page 165
Exotic Fruits in Australia	page 168
Picture Your Garden Year	page 171
Cottage Garden Notes	page 173
Australian Garden History Society	page 174
Book Reviews	page 175
Nursery Notes	page 176
Letters	page 177
Garden Cuttings	page 178
Bowral's Tulip Time Festival	page 180
A Garden Nursery on the South Coast at Berry, New South Wales	page 180

THE TRADESCANT TRUST

The Museum of Garden History

St. Mary-at-Lambeth
(next Lambeth Palace) S.E.1.

The Tradescant Trust, a registered charity, has been established to convert the former Church of St. Mary-at-Lambeth in South London into the world's first Museum of Garden History, which will provide an active centre for interests related to gardens, gardening and conservation.

In the churchyard lies the tomb of the two Tradescants, successively gardeners to the first Earl of Salisbury, the Duke of Buckingham, and to King Charles I; next to their tomb lies that of Admiral Bligh of the Bounty. The churchyard is being made into the Tradescant Garden, planted with the species shrubs and flowers they introduced, and plants which were grown in their

Lambeth garden.

To complete the work of restoration and to establish the Museum one million pounds is needed. By becoming a Friend of the Tradescant Trust you will be helping in the realisation of this project.

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Friends receive a membership card and a regular newsletter.

Another Step Forward



(photo: Keva North)

This issue brings to a close Volume 4 of The Australian Garden Journal; now we may look back on four years of publishing, first our modest "Garden Cuttings" and then its more robust offspring. But, more importantly, we look forward to the next four years — ten years? — twenty years? To stand still in this competitive world is to slide backwards, and we have no intention of doing that.

So with our next issue, Volume 5 number 1, a new era starts. There will be a brand new format, designed for us by Corporate Graphics of Sydney, extra colour pages and a colour picture on the front cover. More important for us, however, will be the fact that we will be distributing an additional five thousand copies. These will go, under a pilot scheme, to selected newsagents throughout New South Wales and the A.C.T. Depending on the success of this scheme, the next step will be to distribute to newsagents in Victoria, and possibly South Australia and Tasmania. The third stage will be to bring in Western Australia and Queensland, and hopefully to increase our international distribution, which already takes in New Zealand, the United States, the United Kingdom, Canada, Belgium, West Germany and Japan.

Publishing a magazine on gardening, however, is not a road to riches, as many who have tried it will testify. All the prestigious journals which we seek to emulate have considerable sponsorship. "The Garden", for example, is backed by The Royal Horticultural Society, with some 75,000 members; "American Horticulturist" is the journal of The American Horticultural Society, with about 40,000 members; and "Pacific Horticulture" has the backing of no less than four horticultural societies in California — with the added advantage of a tax deduction on donations.

We are, of course, grateful for, and proud of, our connection with The Australian Garden History Society, and it is gratifying that membership of that Society has more than doubled since we

became its official journal in June 1983.

We are grateful, too, to all those people who, out of the goodness of their hearts, send us articles on a wide range of subjects, many of which are indisputably worthy of a place in a journal of the highest international standing. And we must thank all those firms and organizations, some of them large but a great many of them small, who support us with advertising, for without advertisements we would not be able to survive. It is, of course, nice to hear that this support does pay off — for example the other day someone phoned us to say that his advertisement had produced such excellent results that he was cancelling all other advertising in our favour.

Seriously, we do **need** your support. The more subscribers we have, the more advertisers we have, the better this journal will be. We hope that you will approve of the changes we are about to introduce, for we believe that they will make the journal more attractive and more readable, and will further establish its position as **the** journal for serious gardeners.

You can help us in one of two ways. If you approve of what we are doing, make sure that all your gardening friends know about us; if you are in a generous mood you may like to give a gift subscription for a year — there is a coupon towards the back of this issue that you can use; but at least tell them that they should read The Australian Garden Journal. And, secondly, if you think that we could be doing it better, tell us how! Sensible and constructive criticism is always welcome.

By the end of Volume 5, that is in twelve months time, we aim to have doubled our circulation — with **your** help.

TIM NORTH

PROFILE

Ross McKinnon

Ross McKinnon has the right family background for his position as Curator of the Mt. Coot-tha Botanic Gardens in Brisbane — at the age of 36 he is the youngest Curator of a major botanic garden in Australia.

His great-great-great-grandfather was supervisor of the Royal Gardens in London in the late eighteenth century, and won the favour of King George III by presenting him with a gerbera, introduced from Turkey. Another ancestor was, during the last century, granted land in Adelaide on which to establish an experimental farm for the growing of vegetables, fruit and exotic plants.

After working for Brisbane City Council for eleven years, during which he rose to the position of Superintendent of City Parks, he was appointed to his present position in 1983, taking over from Harold Caulfield who retired in that year after twenty-seven years as Curator of Brisbane's Botanic Gardens.

Before moving to Brisbane Ross gained extensive experience in horticulture, botany and landscaping in Adelaide and Whyalla. More recently he has completed post-graduate studies in landscape architecture at the Queensland Institute of Technology. Away from work he averages ten hours a week in the garden of his home at The Gap.



Design Concepts of Australia's Newest Sub-tropical Botanic Garden

by Ross McKinnon

Introduction

In 1968 the Brisbane City Council investigated the desirability of establishing a second Botanic Gardens as the small flood-prone City Botanic Gardens was unable to cope with the increasing number and diversity of plants able to be grown in a sub-tropical climate.

The eastern slope of the Taylor Range in Mt. Coot-tha Forest Park was chosen. Here was a 57 ha site of open woodland, 5 km from the city centre with all the space requirements, good topography, though with poor soils, for a Botanic Garden.

Detailed site planning began in 1974 with a Gardens Advisory Committee comprising prominent members of the horticultural and planning disciplines guiding early developments, under the direction of the Council's Landscape Architect, Dean Miller, Harold Caulfield, and the Gardens' first Curator, Barry Dangerfield.

Brisbane's Mt. Coot-tha Botanic Gardens were opened in January 1976, and nine years later, although still in their infancy can to-day attest to the soundness of their basic design intent.

Funded by the Brisbane City Council, the Gardens have developed to meet the needs of the ratepayers of Brisbane. Community involvement and participation are an important tenet in the Gardens' chapter.

Clearly labelled plantings are arranged geographically rather than systematically, with genera grouped in regional plantings.

An administration building incorporating a 300-seat auditorium, public lending library containing 8,000 botanic reference works, a laboratory and offices were built and opened in 1975.

Objectives of the Gardens

To appreciate the design concepts of the Gardens it may be pertinent to list its objectives.

(i) Horticultural

To display and introduce as large a range of plants as possible to the public. Collect and grow representative generic collections with the aid of simulated climates.

(ii) Educational

Through the Education Officer, offer a wide range of inter-

pretative material for students and adults; develop a teaching, thematic, economic and rare fruit garden; conduct tours and lectures for the information and enjoyment of the public.

Development of a botanic public lending library.

Produce a range of pamphlets and self-guiding material for distribution through the Information Office located at the Gardens entrance.

The Education Officer is responsible for conducted tours (many self-guiding) for 2,000 students a month.

Recreational

The Botanic Gardens must be a place of public interest, they are not designed as a picnic spot or family playground, rather as a centre for the serious study of plants. To this end the Gardens have been created in a pleasant environment conducive to the serious leisure pursuits of the people of Brisbane.

With 8,000 patrons a week the Gardens are already fulfilling these objectives, making them Brisbane's number one tourist attraction.

In the nine short years from their inception, the Gardens now rank as Australia's major sub-tropical display Garden, with 10,000 species of plants, while adhering to the basic design concepts of the Garden Advisory Committee, Landscape Architect, the first Curator, and above all the client, the Brisbane City Council.

Site Analysis

Initially, a slope analysis was made using aerial survey maps. This gave a graphic picture of the site revealing the undulating slopes, very steep gullies and many creeks which comprise this complex land form. The variety of topography ensures diversity of micro climates necessary for growing a wide range of exotic and native plants.

Soils are composed in the main of decomposing Hornfelsed Bunyaphyllite (Schist Clay), slopes steeper than 5:1 have had to be especially treated to prevent land slips.

Drainage — a complex drainage system has been avoided by utilizing the numerous natural drainage corridors on site. Roadways have a crossfall of 30:1, allowing heavy summer rains to be fed into above ground creeks or drains. Subterranean drainage has been avoided as downpours of 50 mm or more an hour are common during the summer and blockages to drainage pipes can lead to very real problems.

Topography — Mt. Coot-tha Botanic Gardens' varied topography has dictated all planning concepts with each valley being filled with compatible genera from a different geographical region. The lowest areas have been further dredged to form two separate lake systems.

Water is a vital if intrinsic element throughout the Gardens, its burbling and gurgling masking the noise of freeway traffic. Water increases the humidity, creating micro climates in the densely planted valleys and contributes significantly to the totality of the environment.

Planning — with a broadly defined design brief for a three-stage development of the Gardens, it was left to the Gardens' administrators to interpret that brief.

The Gardens' design remains informal, much use being made of the original Eucalypt overstory which lends an established air to new plantings. There are no straight lines, paths and roadways where possible follow the natural contour of the sloping site.

Landscaping does not rely on the creation of vistas, rather the preservation of naturally existing vistas. There are three points from which splendid and different views may be obtained and plantings have been designed to preserve and complement these. The Gardens are bounded on three sides by a freeway and major arterial roadway. Views into the Gardens are framed by huge

Eucalypts growing along the Gardens perimeter, while an excellent vista is again framed by Eucalypts at the highest point of the Gardens to the City of Brisbane beyond.

Stage 1 — now almost completed contains (in accord with the original land use plan) —

American, African, Asian regional gardens

Fragrant and herb garden

Cacti and succulent garden

Geodesic Domed Tropical Display complex

Camellia, Azalea and cool temperate garden

Teaching, thematic, economic and rare fruit gardens

Aquatic, bog, and marsh gardens

Soft-wooded flowering trees and shrubs garden

Exotic palm garden

Exotic and Australian native rainforest gardens

Stage 2 is being developed exclusively as an Australian native garden, displaying as wide a diversity of plants as possible with special emphasis on rare and endangered species, particularly rainforest species of which two thousand labelled species have been planted to date with the assistance of a \$200,000 CEP employment grant.

Botanic Garden Community Centre

Mt. Coot-tha Botanic Gardens is the centre of horticultural interest in Brisbane with twenty-four Horticultural Societies conducting regular meetings and annual shows, drawing crowds of 4,000 to 6,000 patrons at a weekend.

Interest in growing native and exotic plants has grown considerably in the last couple of years and to this end the Gardens pursues a progressive seed exchange programme to introduce to the public a wider range of plants than has previously been available in Brisbane.

Mt. Coot-tha Botanic Gardens is a highly individual garden, the plan has evolved from a highly individual site that cannot be duplicated elsewhere. Although the principles governing the design of this garden were very new at the time of its inception, it is now pleasing to note that a number of other gardens in Australia are following similar design concepts.



BRICK PAVING DETAILING WITH SMOOTH AGGREGATE CENTRE :
IN THE FRAGRANT AND HERB GARDEN.

The Australian Garden Journal

GARDEN TOUR OF THE EASTERN UNITED STATES

4th June, 1986

Reservations are now being accepted on this three and a half week tour of some of the finest public and private gardens in - **Virginia, Delaware, Maryland, Pennsylvania, New York, Connecticut and Massachusetts;**

These will include - Dumbarton Oaks and the U.S. National Arboretum in Washington DC; Monticello, Mount Vernon and Colonial Williamsburg; the gardens of the American Horticultural Society; the Ladew Topiary Gardens and a private garden in Maryland designed by Russell Page; the great du Pont gardens at Longwood, Nemours and Winterthur; Meadowbrook Farm in Philadelphia; Old Westbury on Long Island; the Brooklyn Botanic Gardens and Wave Hill in New York; a nursery specialising in unusual perennials in Connecticut; Eleanor Perenyi's garden (she wrote 'Green Thoughts'); and the world famous Arnold Arboretum outside Boston.

Departs 4th June: finishes 28th June 1986

Personally conducted throughout by Tim and Keva North.

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TEA HARVESTING AT NERADA TEA EAST PLANTATION.
(photo: Tea Estates of Australia)

Tea Growing in Australia

by Tim North



NERADA TEA

The Pioneers

Australia's tea industry has its origins in the pioneering days of the 1880s, when the four young sons of Frederick Cutten, who had emigrated from England in 1871, settled at Bingil Bay, on the far north Queensland coast, not far from Innisfail.

The land here supported a dense forest of white cedar, nutmeg, bean tree and quandong, while high up on the hills behind were bloodwoods, stringy bark and Moreton Bay Ash — ideal timber for houses, sheds and furniture. The high rainfall and equable climate seemed highly favourable for the cultivation of many tropical crops.

After one fruitless application for land, a selection was finally secured and title was confirmed in 1886. The brothers named their property Bicton, in memory of the times spent in England as guests of Lord Rowles at his country home at Bicton Hills.

Although all supplies had to come from Cardwell, some thirty miles to the south, it was not long before a few acres were cleared for quick growing crops such as bananas and pineapples. As more land was cleared it was planted with tea, coffee, chicory, coconuts (all from Ceylon), with every kind of citrus, and mangoes. These were followed by tobacco (cigar leaf), ginger, spices, pepper, cocoa, Jak fruit and vanilla. The services of a tea and coffee planter from Ceylon were secured to advise on the cultivation of these crops.

By 1886 a house had been built and the entire Cutten family, who in the meanwhile had been staying in Cardwell, was able to move to Bicton.

By 1891 the tea and coffee plantations were mature, though the tea was not successful, owing to the difficulty in getting the aboriginal labour to pick the leaves on the ten-day regular rotation required. Coffee, which requires only one picking per year, was more successful, and eventually the Cutten brothers had 100 acres under this crop, producing a quarter of a million pounds per year.

Rise and Fall

By 1911 the fortunes of the Cuttens were at their peak, but thereafter misfortune followed misfortune. There were labour problems, brought on by the practice of the Chinese banana growers of paying native labour in opium instead of wages; there was a cyclone in 1911 which caused considerable damage to crops; and with the start of World War I Bicton's lifeline was cut off when all ships were taken off the run for war service. Then in 1918 a killer cyclone struck, virtually ending this epic struggle of thirty-six years. The big thirteen-room house disintegrated into a heap of matchwood; the stone breakwater disappeared as though it had never existed; boats, home stores, furniture and household effects — all were lost; the neat plantations of citrus, coffee and other crops were totally destroyed.

The brothers rebuilt the homestead and lived on at Bicton quietly but things were never the same again. Now in their sixties, they had neither the strength nor the will to replant the plantations. In 1923 one brother died as a result of an accident, two more died in 1930; the eldest, who had left Bicton early in the century, died in a motor car accident in 1936.

The tea plants and the beginning of a new industry.

Ironically, the only memorial that remained to this great pioneering family were the plants that had been their least successful crop — the tea plants. Long lost and forgotten, they grew on in the dense rainforest re-growth at Bingil Bay, and were unnoticed even when interest in tea as a commercial crop was re-awakened by the Bureau of Tropical Agriculture in the late 1930s. It was not until 1958 that they were re-discovered by a Dr Alan Maruff.

Dr Maruff had settled in Innisfail, which he saw as one of the most beautiful and desirable places on earth. Seeking to help the development of the area he started to look around for a new industry; it was his wife, whose family had a holiday home at Darjeeling in India, who pointed him in the direction of tea. After reading the story of the Cutten family, he went in search of the forgotten plants. When eventually he found them there were hundreds upon hundreds of seedlings growing beneath them. He transplanted quantities of these seedlings to the garden behind his surgery in Innisfail, and later in the same year was able to buy 320 acres of land at Nerada, north-west of Innisfail; this land was bordered for a mile on its northern boundary by the North Johnstone River, so ample water was available.

The following year the seedlings from the surgery garden were planted out, and made up the first five rows of the new plantation, the remainder coming from the Bureau of Tropical Agriculture, which by now had an experimental tea area extending over two acres. Seed from this source and from the Bingil Bay plants was also used.

By 1962 the plantation extended over 20 acres. A drought that year killed almost three-quarters of the plants, but these were replaced and by 1968 there were 80 acres planted. An experimental tea harvesting machine was then purchased.

In 1970 Dr Maruff persuaded Burns Philp and Co to join him in developing a full-scale tea industry in North Queensland. A factory was built and more land cleared for planting. Quality, however, was not good, mainly due to harvesting problems; prices realised were lower than expected; there were cost over-runs on the factory construction. Eventually Burns Philp bought Dr Maruff's holding for a greatly reduced sum, and in 1973 sold the assets to Tea Estates of Australia. By this time weeds ten feet high had overrun the hedges of tea plants.

Tea Growing in Australia (cont.)

Tea Estates of Australia.

The story of Tea Estates of Australia (conveniently abbreviated to TEA) had started four years earlier, in 1969. In Innisfail and surrounding area tea was the talking point of the sixties. In India and Sri Lanka the traditional British tea industries were being handed over to local control and highly skilled British planters and factory managers were forced to leave. Some of these found their way to Innisfail, where they attempted to interest the Chamber of Commerce in promoting a new tea plantation. The high cost of land and the unavailability of a block of sufficient size were, however, stumbling blocks.

The catalyst came when a block of 797 acres of forest land, also at Nerada, came up for auction in 1969. At this time Mr Harold Taylor was Chairman of the Chamber of Commerce, and he had the foresight to see in this land the key to the long discussed tea project. Realising that this would be highly capital intensive he sought the support of others in the area, and a group of ten influential citizens was formed; on behalf of this group Mr Taylor bought the land at auction, and the project became a reality.

In 1970 the first 30 acres were planted. By 1971 there were 80 acres under tea, and in 1973, as we have seen, the 440 adjoining acres were acquired from Burns Philp.

In 1973/74 the decision was taken to market the tea as "Nerada" brand, and an old spaghetti factory in Innisfail was bought and turned into a packing factory, using, in the early stages, a milk carton machine. Harold Taylor supervised the installation of packaging machinery, while Rod Taylor developed marketing strategies. In 1974 the local engineering firm, Hourston Engineering, designed a new tea harvester. Later, a tea-bag machine from England was installed, marketing was increased to cover most stores in Queensland, and the State government contract for tea was secured for the first time in 1976.

By 1977 tea was being planted in other areas, mainly on the Tablelands, and enterprising dairy farmers had well over 100 acres of tea between them. Another plantation, called Madura Tea, was producing tea in small quantities north of Murwillumbah, over the border in New South Wales. Expansion, however, continued at Nerada, and in 1979 a new factory was opened.

Later that year an unprecedented drought — no rain fell for 56 days — caused production at Nerada to cease entirely. When rain eventually did fall it took the plantation six months to recover fully. In the light of this experience a fixed boom travelling irrigator, with a boom span of nearly 80 metres, was installed. At the same time a new generation tea harvester was introduced.

Back to Bingil Bay.

In the winter of 1980 a group of people interested in Nerada tea set off to Bingil Bay to find the lost tea trees — Dr Maruff had died the previous year and no hint remained of their whereabouts. Eventually, in deep shade under the forest canopy, a single white flower of *Camellia sinensis* was spotted; then the searchers were rewarded — first one, then dozens, then thousands of tea trees. Fallen seeds over almost a hundred years had produced a thicket that had overwhelmed all the surrounding natural vegetation. Some of the oldest plants — perhaps the patriarchs — were 15 metres high, some of the largest tea plants in the world. Fighting for their survival these had grown into giants almost unrecognizable as the familiar small tea bush; a century of natural selection had resulted in what might be described as "super" tea trees.

The Tea Industry to-day.

In 1981 Nerada Tea began to be sold in quantity interstate; over 50,000 kg were being produced a month. In 1982 the fermenter and drier line at the factory were duplicated, thus doubling the factory's capacity.

To-day, there are some 200 hectares under tea at Nerada, with five "outgrower" plantations. By the end of this year no less than 18 plantations will have been started, all of which will be productive by 1988/9. Nerada at present sells tea equivalent to 25% of Queensland's total consumption, i.e. 750,000 kg per year. Within ten years production is planned to have risen fourfold, that is to a level equivalent to all the tea consumed in Queensland. By the time this article is published, the packing station area will have doubled, and expansion is also planned for the factory at Nerada.

Topography and Climate.

The main requirements of the tea plant (*Camellia sinensis*) are a deep, friable and slightly acid soil (pH about 5.5), high rainfall (at least 2000 mm per year and reasonably evenly spread), an ambient temperature of 23 to 34 degrees Celsius with good humidity for much of the year. Excellent drainage is also required, which is why many tea plantations are on hillsides. The Assam varieties of tea, which are planted at Nerada, dislike frost.

The plantations at and around Nerada are at an altitude of 200 metres or more, on a rich red volcanic soil that has a permeable depth of 25 metres. Average annual rainfall is in excess of 5000 mm (250 inches), which is the highest rainfall in Australia.

Planting, Production, Harvesting.

Nerada tea is planted by seed direct into 1 metre wide polythene-covered beds, set 2.5 metres apart. Current production is over 3000 kg of made tea per hectare, which is one of the highest figures in the world for seed planted plantations, the world average being only 1054 kg per hectare.

The plantation is the most highly mechanized in the world, with all tea mechanically harvested, sorted and packed. Five mechanical harvesters cut the leaves, making a labour content of 0.15 persons per hectare, compared with 5.0 persons per hectare in some other countries. Mature plants are harvested approximately twenty-three times a year, the growing tips only, with three leaves, being cut.

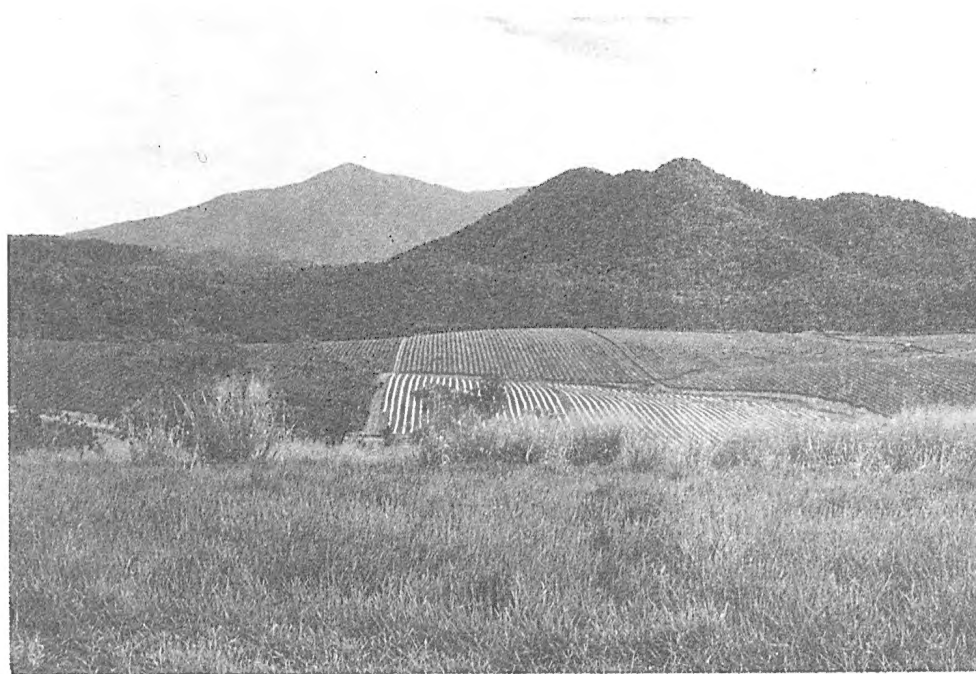
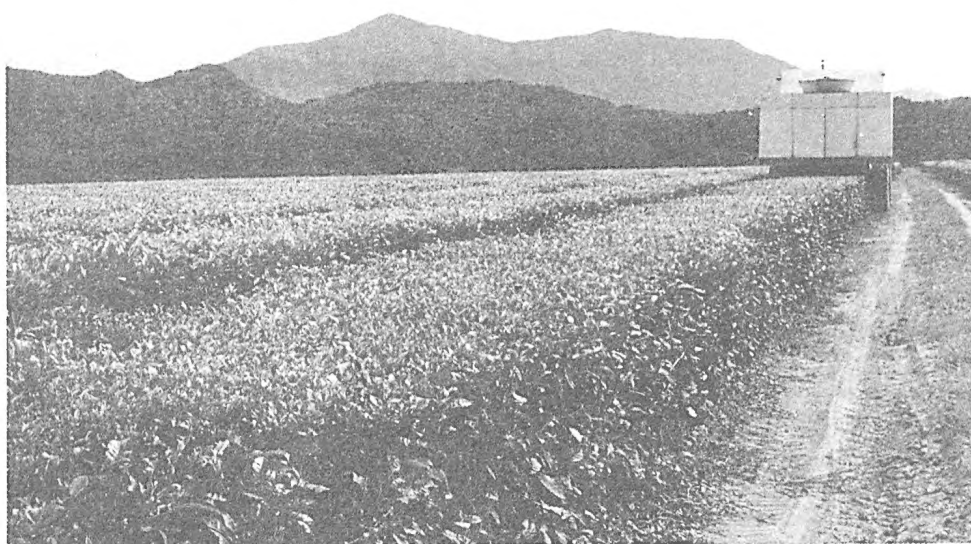
Tea consumption in Australia.

Consumption is fairly static at 1.6 kg per capita per year, which puts us well behind countries like England and Eire. At present less than 4% of the tea drunk in Australia is grown in Australia.

The industry's expectation has always been that 10,000 hectares would be needed to grow enough tea to meet all our requirements, but Nerada's production record indicates that this estimate could be reduced to 6,000 or 7,000 hectares. There appears little likelihood, however of this figure ever being reached.

Just under 300 hectares are currently under tea in Australia, almost all of which is in Queensland, with small plantations in northern N.S.W. Nerada, with 200 hectares, is thus by far the largest commercial tea plantation in Australia.

MECHANISED
HARVESTING
AT NERADA
(photo: Keva North)



A NEWLY PLANTED
PLANTATION SHOWING
THE POLYTHENE-COVERED
STRIPS IN THE MIDDLE
DISTANCE: BEYOND IS
A MATURE PLANTATION.
(photo: Keva North)

The Nerada Tea Plantation and factory (but not the packing station) is open to the public on all working days. The plantation is located a short distance north of the Palmerston Highway, not far from Innisfail.

Note:

The author wishes to express his thanks to Mr Harold Taylor, Mr Rod Taylor and Dr Bill Markwell, Directors of Tea Estates of Australia, for their co-operation and for showing him round the plantations, factory and packing station. The story of the Cutten family's settlement at Bingil Bay has been freely adapted from Rod Taylor's excellent booklet "The Lost Plantation; a History of the Australian Tea Industry".

The Flecker Botanic Gardens, Cairns

by R.J. Guthrie

Moves were made early in the settlement of Cairns, in North Queensland, to establish a Recreation Reserve only ten years after it was founded in 1876. This reserve later became the Botanic Gardens, famous throughout Australia for its tropical species.

In its early years a botanical collector, Eugene Fitzalan, arranged with the Cairns City Council to establish a small nursery near the present gardens. He specialised in native plants by growing and selling them to local residents. He collected extensively and to-day there are several native species named in his honour.

Under the conditions of his agreement with the Council he was required to open his garden to the public. Old records document the area as "Fitzalan's Gardens", and these were the beginning of to-day's Flecker Botanic Gardens.

The gardens were to take on a new meaning with the arrival of Dr Hugo Flecker in Cairns in 1932. Dr Flecker conducted a radiology practice but had a variety of interests which focused on natural history, especially toxic plants and animals.

He founded the North Queensland Naturalists Club, and during his term as President collected native plants and formed the Flecker Herbarium (now incorporated with the CSIRO Herbarium in Atherton).

In 1958 the Naturalists Club formed a Native Botanical Preservation Society to construct a Botanic Garden. The Cairns City Council named the Flecker Botanic Gardens in his honour in 1971.

Dr Flecker conducted valuable work on the Queensland Finger Cherry and Tar Trees. His energies were then directed to marine stingers, following fatalities from jelly fish in the area. One species he collected resulted in the identification of the deadly box jelly fish, *Chironex fleckeri*.

Expansive Tropical Area

The Gardens extend over an area of 319 hectares, and are split into three areas.

The Centenary Lakes to the north of Greenslopes Street were constructed in 1976 as a project to commemorate the first hundred years of the establishment of the City. The lakes are unique to Australia, with both freshwater and saltwater lakes on the one site. The resulting display of plant life from the two different systems is extensive.

The Lakes area has been planted with a rich diversity of palms and shade trees. Notable specimens are the mangrove palm *Nypa fruticans*, the massive palm, *Orbignya cohune*, as well as *Neodypsis decaryi*, *Coryha elata*, *Hydiastele wendlandiana* and the Queensland black palm, *Normanbya normanbyi*.



COUROUPITA GUIANENSIS
(THE CANNON BALL TREE):
IN THE FLECKER BOTANIC GARDENS.
(photo: Keva North)

The Lakes are bounded by rich areas of palm, melaleuca and pandanus swamp, which now links the Lakes area to the Flecker Botanic Gardens by means of a boardwalk with wheelchair facilities. This area has a very rich and diverse bird and animal population, popular for ornithologists and botanists alike.

The Flecker Botanic Gardens area could be described as the more formal area of the Gardens in its landscaping. Some significant specimens are found in this area of the gardens, as it has been established longer than the rest of the gardens. The Administration Office is found under the massive spreading Rain-tree, *Samanea saman*, which has a girth at the base of over six metres.

The Gardens also have a fine collection of tropical fruit trees, such as Mangosteen (*Garcinia clusia*), Breadfruit (*Artocarpus altilis*), Miracle Fruit (*Synsepalum dulcificum*). In all, 22 different varieties of fruit trees can be found in this area. Some of the more spectacular plants when in flower are the Flame of the Forest Vine (*Mucuna novo-guineensis*) and the Shower of Orchids Vine (*Congea tomentosa*). Also to be found in the Flecker Botanic Gardens is a very good collection of palms with many spectacular species.

Over the last twelve months, over 600 plants have been labelled in the Gardens.



AGATHIS ROBUSTA
(QUEENSLAND KAURI) IN THE
GARDENS.

(photo: Keva North)



THE FRINGE OF THE PALM, MELALEUCA
AND PANDANUS SWAMP.

(photo: Keva North)

The orchid collection is prospering under valuable advice given by a local expert. Future proposals to upgrade and reconstruct the Munro Martyn Fernery should see the Flecker Botanic Gardens take on an educational resource role as well as being an attraction to visitors.

Most visitors will be surprised at seeing plant species growing with ease in open garden beds that are grown only with great care in heated glasshouses in southern Botanic Gardens. The Gardens are one of Cairns most popular visitor attractions.



Robert John Guthrie

Robert Guthrie holds a Diploma of Horticulture (Massey, N.Z.) and a Graduate Diploma of Landscape Architecture (Queensland Institute of Technology). He has a total of ten years experience in Local Government, with Brisbane City Council, Tweed Shire, Wollongong City Council, and is now Director of Parks and Recreation, Cairns City Council.

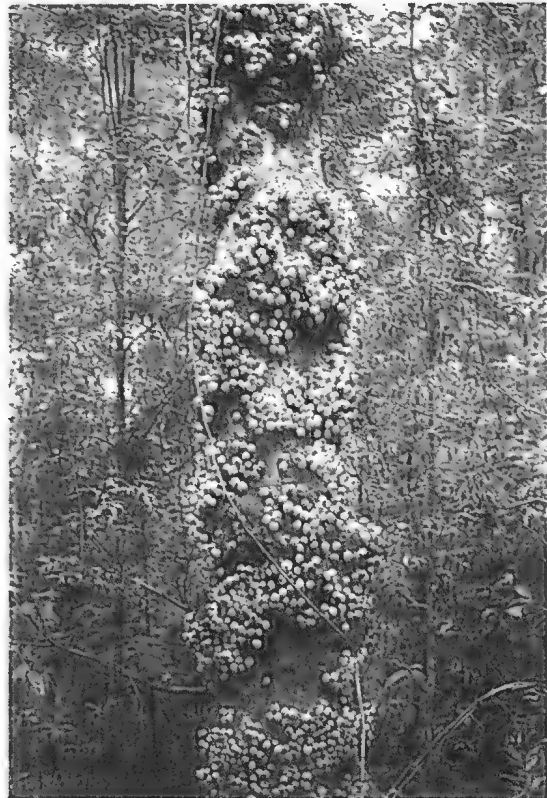


North Queensland
rainforest trees.

left:
AUSTROMUELLERA
TRINERVIA

right:
SYZYGIUM
CORMIFLORUM
(fruits)

below left:
CLERODENDRON
CUNNINGHAMII
(fruits)



below left:
SYZYGIUM ALLIILIGNEUM

below:
OREOCALLIS WICKHAMII
(all photographs by Alan Bragg)



North Queensland Rainforest Trees

by Alan Bragg

People often believe that within the dark reaches of the rainforest lurk many unknown species of plants, yet to be seen by Man. Though this is partly true in that there are some, the real truth is that these "unknown" species are in fact collected but lying in the dry state in herbarium boxes. Much outstanding arduous work lies in naming these collections.

There are presently 800 tree species, representing some 91 families, that grow in excess of 10 cm in diameter in our northern rainforest. This is an area between Townsville and the Torres Strait. What we have in North Queensland is Australia's richest floral bank. On a rich rainforest virgin site one section could yield in excess of 100 different species over the 10 cm diameter size, not to mention the many shrubs, ferns and vines that occur in the lower strata.

This immense stacked greenhouse has the potential to supply plants to almost all situations outside its environment, whether it be for indoor plant use, as garden ornamentals, as park trees or for rehabilitation type work. The sad fact, however, is that very little work has been done on the individual species and past efforts have been scientific, concentrating on trying to understand the complexities of the rainforest system.

The 1980s have seen a tremendous upsurge of interest in native species, and people now take a pride in growing our own plants. The promotion of native plants started in the 1950s with the formation of the Society for Growing Australian Plants, and now with branches all over Australia and in most large towns its work of extolling the qualities of our native species has been extraordinary.

This has, however, been slow with regard to rainforest and promotion of these plants is now only in its infancy. Of course rainforest is a unique type with its unique problems. It is difficult to appreciate any species' qualities in such a mass of vegetation and there are hidden qualities other than flowers and leaves that may only become apparent on trialling the species individually. It is only when trees have become isolated either as individuals or as edge trees on cleared sites that some potential may be realized. Then there is always the difficulty of acquiring seed; most rainforest trees can easily be propagated from seed, but there is variability in flowering and fruiting times and in the quantity of seed produced. These factors, I believe, have played their part in holding back the mass introduction of rainforest trees — the mere fact that we have not seen enough of an individual to appreciate its talents.

Now this is changing. In 1971 the CSIRO Division of Forest Research commenced operations in Atherton, specifically working on rainforest. It now has a well established arboretum where one can see many species growing individually, and some very keen people there are promoting species to local organizations.

I don't see many people wishing to establish rainforest in their suburban gardens. There is certainly room to include a couple of specimen trees, shrubs or indoor plants. Most rainforest trees, although very tall in their natural situation, are usually reduced to less than one-third of their natural height in open situations

and they are not as messy as *Eucalyptus* species, which tend to drop many branches.

For those in good localities the re-vegetation of gullies and problem areas with rainforest species is possible, but I see their greatest success on such sites as underplants to cover crops of hardier species, even pines, which perhaps can later be removed as the rainforest dominates the site. Failures have been seen on dry bank exposed gullies which are frost susceptible, and a little more thought and attention is necessary to avoid such disasters which at this stage only create bad precedents.

My main interest here is to show you some of the beauty of a small selection of our rainforest trees, few of which would be obtainable in nurseries. Hopefully, through the efforts of interested individuals, societies and government we will all be able to choose from a larger list of good Australian natives.

Pithecellobium grandiflorum (syn. *Abarema grandiflora*)
Tulip Siris, Laceflower Tree, Snowwood.

A small tree which can attain a height of up to 10 m. Can tolerate a range of site conditions, but on well-drained soils. Fragrant pinkish-red flowers with prominent brush-like anthers. Produces attractive twisted seed pods. Good specimen plant. Flowers in January.

Tapeinocheilos australis
Backscratch Ginger.

Consists of several twining stems up to about 1.5 m in height, with large leaves. Produces red flowers on the spike, which is hard and wax-like, to 40 cm long. Grows from seed pr division. Flowers in autumn and winter.

Arytera divaricata
Rose Tamarind.

Medium sized tree attaining a rainforest height of approximately 20 m. Seemingly hardy species, growing in a range of sites. Very attractive with bright red flushes of spring growth. Propagated from seed, which matures in October. A species with a lot of ornamental potential.

Xanthostemon chrysanthus
Brown Penda, Black Penda, Johnstone River Penda.

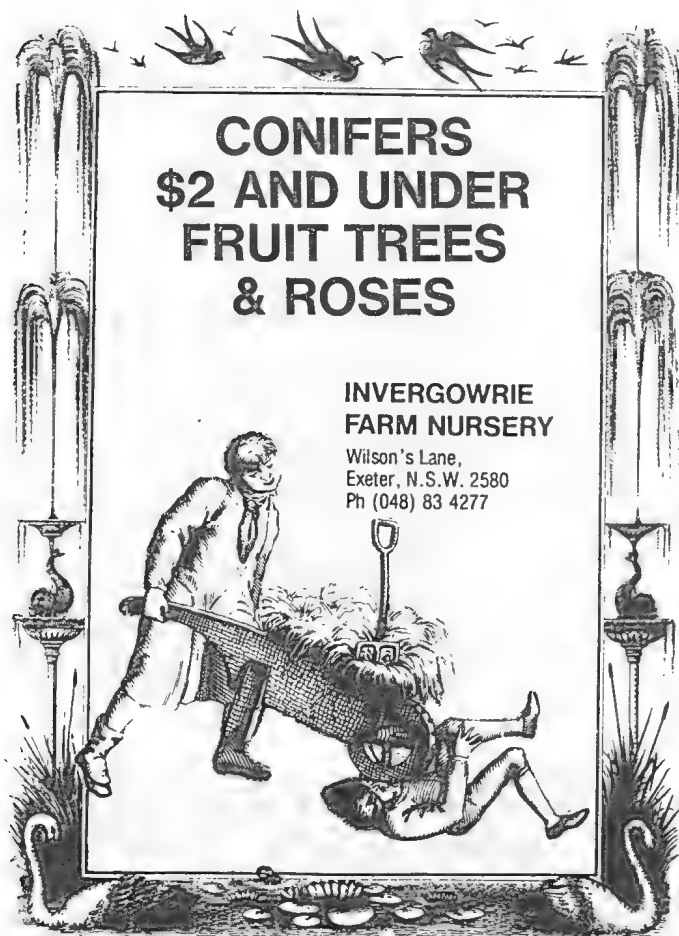
Large tree to 25 m, frequently found on creek banks. Flowers attractive yellow with prominent anthers, in winter; specimens observed flowering well at about 3 m high.

Grevillea pinnatifida
Findlay's Silky Oak.

Medium sized tree to 20 m. Leaves are lobed when young, becoming entire as the tree matures. Young lobed leaves attractively bronzed on the underside. Attractive white flowers on spikes to 15 cm long. Flowers in spring and summer.

Austromuellera trinervia
Mueller's Silky Oak.

One of our most beautiful trees. Height to about 16 m. Presently known from three locations. Produces cream pendulous spikes to 60 cm long in late December. Fruits large and woody, about 16 cm long.



North Queensland Rainforest Trees (Cont.)

Oreocallis wickhamii

Satin Oak, Pink Silky Oak, Satin Silky Oak.

Another of our spectacular flowering rainforest trees. Reaches a height of about 30 m, much less in cultivation. Flowers in October, a brilliant red display. Two forms exist, one with lobed leaves when young, the other with entire leaves. Fruits are woody, 6 to 11 cm long. Seed is difficult to obtain.

Pithecellobium pruinatum (syn. *Abarema sapindoides*)

Tulip Siris, Stinkwood, Snowwood.

A handsome tree around 10 m tall. Cream flowers with fluffy anthers appearing in spring. The pods are attractively twisted, with red centres. The common name Stinkwood refers to the unpleasant smell of the freshly cut wood.

Randia hirta

Hairy Randia.

A rainforest shrub growing to approximately 1 m in height. Flowering is mostly in November and the brilliant white flowers make a really attractive display in the lower story. Leaves hairy. Great potential as an indoor specimen.

Clerodendron cunninghamii

A tall shrub of the Verbenaceae. Seems a very adaptable species with a wide range. Flowering observed in summer, usually profuse and the long slender white flowers with long stamens are an attractive sight being well pronounced from the tree. The unusual wax-like red and black fruits further enhance the potential of this species.

Gmelina fasciculiflora

White Beech, Grey Teak, Northern White Beech.

A large rainforest tree towering to the top canopy. Often deciduous being leafless for a period in July and August — this is an uncommon trait for a rainforest species. Has attractive light green foliage and produces a pale purple flowering in late spring. Large purple fruits are produced in summer. A hardy species which has a lot of potential.

Syzygium alliligneum

Onionwood.

Tree to 15 m. Produces large white flowers 4 to 5 cm in diameter in late autumn, developing into very attractive glossy red fruits 5 to 8 cm long and 4 to 5 cm wide. Bark on larger trees is flaky.

Syzygium fibrosum

An attractive shrub or small tree. Flowers occur as cream or apricot in pom-pom like clusters. These produce brilliant red clusters of fruit between November and February. Moderately drought resistant.

Cassia queenslandica

Old Man's Consolation Tree.

Found on rainforest edges growing to about 10 m. Flowering in October to a delightful display of bright yellow pendulous racemes. Produces a fruiting pod to 35 cm in length. Good shade tree or park specimen. Common name thought to be derived because old men beat their backs with the pods to keep their backs from becoming stiff.

Stenocarpus sinuatus

White Silky Oak, Wheel of Fire Tree, White Beefwood, White Oak, Tulip Flowers.

One rainforest tree that we all know. A slow grower but well worth the wait of about 10 years to the first flowering. Easily grown from seed. Flowers in summer and autumn.

Darlingia ferruginea

Rose Silky Oak, Silky Oak.

Grows to about 20 m in rainforest situation. Has attractive large leaves, rusty on the underside. Leaves are lobed when young becoming entire as the tree ages. Flowers are cream in spikes to 30 cm long. They are scented and appear May to June.

Darlingia darlingiana

Brown Silky Oak, Silky Oak, Rose Silky Oak.

Grows to about 25 m. An attractive foliated tree with large lobed leaves when young. Produces flower spikes to 20 cm long with scented flowers, attracting a multitude of insects. A very attractive tree easily grown from seed.

Pithecolobium hendersonii

A tree of the legume family attaining a height of approximately 10 m. The white ball-like head of 10 to 14 flowers is followed by a pod which is red on opening showing black oval seeds. An extremely attractive plant. Flowering around November.

Metrosideros queenslandica

Pink Myrtle, Myrtle Satinash.

One of the most attractive representatives of the Myrtaceae group of rainforest trees. A large tree to 25 m but to less than 10 m in an open situation. Produces showy bright yellow flowers in spring. New foliage is tinted a pink-purple at the leaf base. Prefers a shady position to produce a well formed specimen. Seed collected in March.

Harpullia frutescens

A dainty single stemmed shrub of the rainforest understory, rarely reaching 3 m. In April it bears a highly fragrant flowering

of white pendulous bell like flowers. Has attractive foliage. One of the most promising indoor plants.

Symplocos cochinchinensis

White Hazelwood.

Medium sized tree. Flowering in June, flowers white on spikes which are clear enough of the glossy green foliage to make a very attractive display. Flowers are scented and attract many insects. Species appears to be relatively frost resistant.

Leptospermum wooronnooran

Bartle Frere Tea Tree.

Wooroonooran is an aboriginal name for Bellenden Ker, the mountainous range on which the species occurs. Tree grows to about 9 m on this site, which is extremely windy, wet and cold. Flowers in December, the mostly single flowers are white, but they terminate the branches to make a fine display. Has good potential for windbreak planting and would also be a good solitary ornamental.

Syzygium luehmanii

Cherry Satinash, Creek Cherry, Lillipilli, Scrub Cherry, Small-leaved Watergum.

A large tree reduced in height in cultivation. Flowers are small, white, and honey-scented. Attractive feature of this tree is its new pendulous spring foliage which varies in shades from yellow to pink to red. Small red fruits add to the beauty of this tree.

Syzygium wilsonii subsp. *cryptophlebium*

Plum Satinash.

To 25 m in rainforest. A smaller form reaches about 3 m. Has attractive pink to scarlet new leaf growth seen from August to October. The species will not tolerate exposed situations. Seed is readily available.

Syzygium cormiflorum

To 12 m in rainforest. Attractive for its cream flowers growing on the trunk, which in the rainforest attract possums and honey eating birds. The large oval fruit produced from the flowering although inedible makes an unusual display.

Note: the author wishes to point out that opinions expressed in this article are his own personal opinions and are not necessarily those of the Department of Forestry.



Alan Bragg

Is a forest technician employed by the Queensland Department of Forestry. He is stationed at Atherton and for the past twenty years has worked on many aspects of rainforest research. He has always been intensely interested in the many qualities of our rainforest species.



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A Zoo provides sanctuary for rare and endangered species

Taronga Zoo has long been concerned with breeding rare and endangered animals. The Zoo's conservation programme has now been expanded to include endangered plant species.

Taronga's Gardens Department has recently planted a garden featuring endangered native flora, including some of Australia's rarest plants.

The garden has been sponsored jointly by Wirreanda Nursery at Ingleside and the Australian Association of Zoo Friends. Wirreanda Nursery, which specializes in growing Australian natives, has generously donated all the plants, which include endangered species of Acacias, Grevilleas, Melaleucas, Ecalypts, Callistemons, Prostantheras and Boronias. The species, although rare, are hardy and should provide visual impact quickly. Once established, a second stage will be implemented using plants which are more fragile and difficult to grow.

Because of Australia's geographical isolation many of our plants and animals are unique. Modern civilisation has put pressures on the natural environment that have led to an ever-

increasing number of plants and animals becoming extinct, rare or endangered.

It is hoped that the new garden displaying these threatened plant species, alongside Australia's rare and unique animals, will be a reminder to Zoo visitors of the urgent need to protect and conserve the total environment and our unique heritage.



left to right:
HOWARD SMITH OF WIRREANDA NURSERY, IAN STROEM-HANSEN
GARDENS SUPERVISOR TARONGA ZOO AND LORRAINE MOUSSET, ZOO
FRIENDS' PRESIDENT, AT THE OPENING OF THE RARE AND
ENDANGERED PLANT GARDEN AT TARONGA ZOO. JUNE 1985.





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211787

Spring in the Royal Botanic Gardens, Sydney, 1985

If you have not visited the Royal Botanic Gardens on Sydney Harbour in spring you have not lived (in a gardenesque sense of the word).

Since the last century the Gardens have been famous for their "Spring Walk" situated to the south of the sandstone wall which was completed in 1816 in the time of Governor Lachlan Macquarie. In an age when exotic plants were much less accessible to the general public, the effect of massed flowerings must have been considerable, but for too long we may have been "resting on our azaleas".

More recently, these plantings have been upgraded to include very colourful displays of Rhododendrons, Wistaria, flowering peaches and annuals in early September.

But now Spring in the Garden means even more than that.

In October last year the Gardens conducted a special four day spring festival in which specialist plant societies were invited to put on displays in a large marquee between the ponds and the massed plantings of annuals arranged as carpet bedding round the Choragic Monument.

As well as this, the production glasshouses, which are normally closed to the public, were opened for inspection and proved to be very popular.

October was chosen for a variety of reasons; partly to fit in with the various societies, partly to give visitors the opportunity to see less known spring flowering trees in the Gardens, such as

the Waratah Tree, *Oreocallis wickhamii*, and the Chinese Fringe Tree, *Chionanthus retusus*, and the first of the spring roses.

Over 32,000 people came to Spring in the Gardens last year. This year it seems Spring in the Gardens will be even better. To date twenty plant societies (compared with sixteen last year) have indicated that they will contribute to the marquee display. Plant groups to be represented include African Violets, and other Gesneriads, Bonsai, Bromeliads, Cactus, Camellias, Carnivorous Plants, Geraniums, Herbs, Iris, Liliiums, Native Plants, Orchids, Palms, Proteas, and representatives from Greening Australia and Organic Growers.

The production glasshouses will be open again this year (for extended hours) as will be the Herbarium. On the Sunday and Monday the National Herbarium of New South Wales, which holds close to one million dried plant specimens and carries out important botanical research, will hold an open day so that the public can see what happens behind the scenes. Visitors will see for themselves that an herbarium is not a place that either grows or keeps herbs.

As well as this there will be music in the Gardens, maypole dancing and refreshments.

Spring in the Gardens will extend from Saturday 12th to Tuesday 15th October inclusive. All activities are free.

It is hoped that Spring in the Gardens will continue to develop over the next few years to become Sydney's version of the Chelsea Flower Show.

Additional information may be obtained by writing to the Royal Botanic Gardens, Mrs Macquarie's Road, Sydney 2000, or telephoning Edwin Wilson or Michelle Frank on (02) 231.8111.

Edwin Wilson, Communications Officer, Royal Botanic Gardens Sydney.



Protection of a Living Heritage — the Notable and Historic Trees Scheme of New Zealand

by R. Flook

Conservation issues of one sort or another are constantly in the news at the moment, with various groups trying to save and preserve parts of New Zealand's "past". The public, faced with a lack of clear information on the issues involved often becomes negative and ignores the issues at hand. It is very important that those with their own particular conservation interest should not ignore this. A well prepared and reasoned case is an entitlement the public deserves. This will enable them to make an enlightened judgment on an issue.

There is an understanding amongst all New Zealanders that trees are a valuable asset from an economic point of view. However, what is often overlooked is that trees form part of New Zealand's heritage and that they, in some instances, pre-date man's arrival in this country by hundreds of years. There are many significant trees that contribute to our history, or by their stature are of great beauty or of scientific interest. While these trees are not "economic" in the normal sense, they make a tremendous contribution to the urban and rural scene. This contribution is often more widely recognized by visitors to New Zealand, for example the recent comments by Dr David Bellamy about the importance of Whirinaki forest.

This article will describe the reasons for protecting significant trees and how you as members of the public can help.

The Notable and Historic Trees Committee

This sub-committee was formed by the R.N.Z.I.H. in 1977 to locate and identify significant trees in New Zealand. The committee's first task was to set out clear definitions for notable and historic trees. Before a tree can be considered for either of these categories it must be at least fifty years old.

A Notable Tree: is one which is recognized as rare, or of scientific interest, or of exceptional stature. The term notable exotic tree describes an imported species and the term a notable native tree is self-explanatory.

An Historic Tree: describes a tree that has a link to our history, legend or an important event. An historic tree can be either native or exotic. Very often trees can be both notable and historic.

Notable or Historic Tree Groups: under this category a stand of trees can be registered as a notable or historic group. An example of this group registration would be Isel Park, Nelson.

Examples of the above categories are described at the end of this article.

At present the committee has nine voluntary members, who meet in Wellington and have an interest and knowledge of trees. The members respond to all enquiries from the public regarding the possibility of registering particular trees or tree groups. It is essential that only suitable trees are registered and to do this the following investigative procedures are followed.

An investigation begins when information on a tree is supplied by a member of the public. The information is then forwarded to a tree registration officer, who is nearest to the location of the tree. These Voluntary Tree Registration Officers (T.R.O.) are appointed by the committee to assist in the assessment of the nominated tree. The tree is evaluated by means of a standard method set out in a manual of guidelines produced by the committee. The details of the tree are recorded on a registration form, which requires an owner's signature, and has descriptive notes with dimensions. This information together with a recommendation and photographs is sent back to the committee for final approval before being included on the National Tree Register for New Zealand. Following approval by the committee an enamelled label of the tree's designation is sent to the owner or Tree Registration Officer for fixing to the tree. This label identifies the tree as significant to the public, thereby giving some recognition and small measure of protection for the tree.

Legal Protection

At present there is very little legal protection for significant trees. Many trees are listed on District Schemes but this is only a very limited form of protection. The committee has been actively lobbying for legislation. So far legal opinion is not certain as to whether new legislation is needed or whether protection can be afforded by Historic Places Trust, Q.E. II Trust or the Nature Conservation Act. We feel that it is important that any legislation must be specific and not be an overall blanket of protection. This blanket protection can only antagonise a "public" very conscious of interference in the individual's rights to act in their own interests. The protection of significant trees depends on public awareness and goodwill. Many examples exist on our records of the loss of trees through ignorance or the will to flout the public interest.

For example:

1. A splendid pohutukawa was cut down by mistake due to an inaccurate location on the District Scheme.

2. The removal of some magnificent Norfolk Island Pines at Eastbourne. This was carried out by the Eastbourne Borough Council in spite of public opposition and expert advice that their removal was not warranted. It has now been established that the trees cut down were not in fact causing the problem attributed to them. The gap left is irreplaceable to the community.

The many recorded examples we have of "mishaps", etc. show that public support and interest should be given some legitimacy enabling action to be taken to prevent these irreparable losses. We can no longer deal irresponsibly with our national heritage of significant trees. We are custodians of this heritage to be handed on to future generations of New Zealanders.

For legislation to work, we believe that the R.N.Z.I.H. should govern the scheme. The following information sets out a possible structure which could be used to administer the scheme. This will be necessary soon, as the workload is now almost unmanageable for the voluntary committee.

We would recommend the appointment of a R.N.Z.I.H. Administration Officer, say two or three days per week, Government funded (refer note at end) to carry out its present work, but to link in with Tree Registration Officers and improved legislation.

It is envisaged that such an Administration Officer would be stationed at Lincoln or preferably Wellington and be responsible to a Board such as the present Notable and Historic Trees Committee.

It is expected that the surplus time of the Administration Office two-three days per week could be used by a local body such as Wellington City Parks Department, the Historic Places Trust or the Q.E. II Trust.

Note: Government Acts suitable for providing funds for the employment of an Administration Officer;

Q.E. II Trust — 1 day

Historic Places Trust — 1 day

R.N.Z.I.H. Direct from Govt — 1 day

Total initially — 3 days (reducing to 2)

Reality is necessary when considering protection for our national trees. Other very important aspects for deliberation are noted as follows:

1. Maintenance.
2. Insurance following damage caused by, e.g., a tree shedding a branch.
3. Arbitration in the case of disputes.
4. Processing and up-dating information on the National Tree Register.
5. Research and an accurate legal recording system.
6. Site visits and periodic inspections.
7. Publicity.

Current Investigation

An important avenue of information on significant trees is the work done by Mr S.W. Burstall, a foremost authority on trees in this country. Mr Burstall compiled a series of Forest Measurement Reports in 1974 under the auspices of the Forest Research Institute. The committee has been researching these fascinating reports in order to up-date the reports and register the listed trees of national significance. These reports describe trees and the reasons for their being notable or historic and clearly arrange the subjects as being of national or local interest. The following extracts from the seven reports covering New Zealand demonstrate the wealth of information available and also the great heritage of trees this country has:

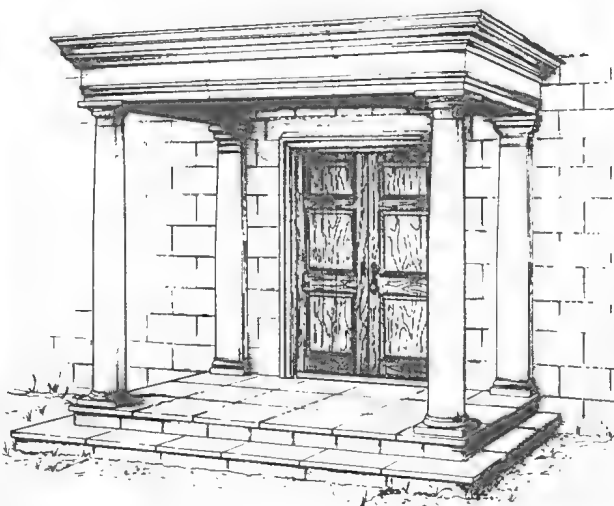
Northland Auckland Report No 16.

1. *Metrosideros excelsa*, Pohutukawa. Butlers Bay, Mangonui, 1968. Diameter at breast height 125 ins. Height 60 ft. Spread 120 ft in 1968. The largest Pohutukawa recorded. Age possibly between 500 and 800 years old.

2. *Quercus robur* (syn. *Q. pedunculata*), Common English Oak. Waimate North. The oldest oak in New Zealand, the acorn being brought from Goat Hill, Dorset, England, by Richard Davis one of the early Church Missionary Society missionaries who arrived at the Bay of Islands in the brig "Governor Macquarie" on the 15th August 1824. The acorn was planted at the mission station at Paihi. In 1831 Davis moved to the new mission station at Waimate, taking the tree with him. It was seen there by Fitzroy, in 1835, who had this to say "A thriving young English oak, near

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Mr Davis' house, augurs well; for where English oaks succeed, many other useful trees will certainly grow ... Englishmen one now meets everywhere; but a living healthy English oak was a sight too rare near the Antipodes to fail in exciting emotion". (Voyages of Her Majesty's Ships Adventure and Beagle, Vol 2, by Robert Fitzroy, p. 604, London 1839.) Although ranking low in size for trees of this species in New Zealand, when inspected and measured in 1971 the tree was very healthy, diameter at breast height 60 ins, height 60 ft, spread 85 ft. Hort. List (1941) No 2.

3. *Vitex lucens*, Puriri. Marist Brothers Marcellin Hall, Pah Road, Royal Oak, Auckland. Diameter at breast height 54 ins. Height 52 ft. Spread 90 ft in 1970. A magnificent tree in a group of exotics probably planted by William Hart about the time he built his house nearby in 1846. The largest and best planted puriri recorded anywhere. There are many other good puriris planted on the area formerly called "Pah farm", part of which is now Marcellin Hall. The most noteworthy is a splendid avenue of trees running up from Pah Road to the entrance of what is now Monte Cecilia Convent. This avenue was probably planted by Thos Russell soon after 1870 along the driveway to his house.

Waikato Thames Valley Coromandel Bay of Plenty Report No 17.

p18. *Eucalyptus regnans*, Tasmania and Victoria Marshmeadows Newstead. Girth at breast height 37 ft. Height 225 ft in 1969. Planted by Captain Runciman c. 1878. The late Mr Gudex measured its height by theodolite in 1957 as 219 ft. In 1964 Forest Service Officers measured the height also with a theodolite

GARDEN LOVERS TOUR OF FRENCH & ENGLISH GARDENS - JUNE 1986

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as 234 ft. However, some of the top was blown off during the Wahine gale 1968. The tallest tree of any species recorded in N.Z.

Taranaki Wanganui Rangitikei C. North Island Report No 19.

p.24. *Magnolia campbellii*, Pink Tulip Tree, E. Himalaya, Hamlet Street, Stratford. Diameter at 1 ft 52 ins. Height 51 ft. Spread 69 ft in 1969. Planted by the late Percy Thompson c. 1918. Believed to be the largest of this species in the world. It has been estimated to have carried about 3,000 blooms in one season.

Corynocarpus laevigatus, Karaka. Te Poronui Pa, near Waitotara. Te Poronui was a pa of the Nga Wairiki hapu of the Nga-Raunui, at Papatupu, near Moumahaki, about four miles from the hotel at Waitotara. The earthworks lie at the junction of the Moumahaki River with the Waitotara.

The warriors of the Ngati Hine hapu of the Ngati Ruanui tribe (from Takiruahine and other Ngati Hine pas) went down to storm Te Poronui Pa some 120 years ago. The noted Nga Rauru chief, Tahupotiki, stood on the main rampart of the pa, and spoke to the invaders. His mana was such that the attacking party departed without striking a blow, on finding that he was there in person. A karaka tree was planted by the tribesmen to mark the spot where Tahupotiki stood on the ramparts of the Te Poronui pa and harangued the invaders.

(The above is taken from a list of historic trees compiled by John Houston on 10th December 1934 and given to George Fuller by Rigby Allan from the Taranaki Museum files.)

Marlborough Nelson Westland Report No 21.

p.41. *Podocarpus spicatus*, Matai Lake Ianthe on the main road south. Diameter at breast height 91 ins. Height 89 ft. Spread 90 ft and height to first branch 17 ft in November 1966. Age about 1,000 years. Signposted by A.A. A very large tree.

North Canterbury South Canterbury Chatham Islands Report No 22.

p.35. *Podocarpus totara* "Pendula", Weeping Totara. Sundrum near Woodbury Geraldine. Diameter at 3 ft 33 ins. Height 28 ft. This is the only known natural specimen of this type. It is the progenitor of several historic trees planted in different parts of New Zealand. A very attractive offspring has been planted in the spacious garden. The property was a country home of A.C.D. Spencer.

p.38. *Quercus robur* (syn. *Q. pedunculata*), Timaru Boys High School. Diameter at breast height 18 ins. Height 26 ft. Spread 40 ft in 1970. Known as "The Lovelock Oak" this tree was presented to Jack Lovelock by Adolf Hitler when Lovelock set a 3 min 47.8 sec world record for the 1500 metres at the 1936 Olympic Games in Berlin.

p.45. *Tilia x europaea* (syn. *T. vulgaris*) (*T. cordata* x *T. platyphyllos*). Common Lime. Raincliff Station. Diameter at breast height 26 ins. Height 60 ft in 1970. An average tree sampled from a 200 yard avenue in which the trees are 15 ft apart in rows 35 ft apart. The planting was done c. 1885; to-day this is probably the finest lime avenue in New Zealand.

Otago Southland Report No 23.

p.11. *Quercus petraea*, Durmast or Sessile Oak. East Aurum Street overlooking Oamaru Harbour. Height 25 ft. Spread 35 ft in 1968. Planted in 1913 "in memory of the Antarctic Heroes, Captain R.F. Scott and his companions, Wilson, Bowers, Oates and Evans, who reached the South Pole on 18th January 1912, and perished on the return journey". Known as the Scott Memorial Oak.

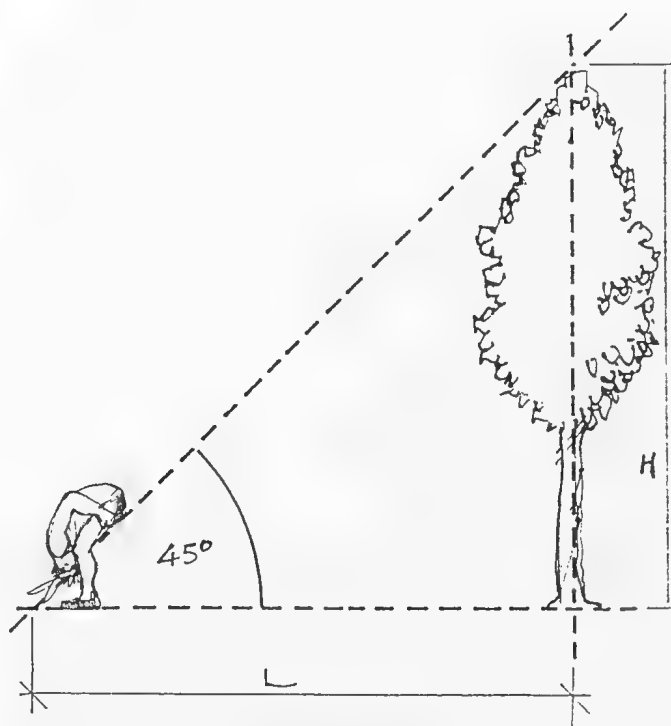
The Task Ahead

The committee needs help from the public and especially from R.N.Z.I.H. members, to assist in the work. Do you know of any remarkable trees in your street or district? Although the Committee is sorely pressed, we are sure there are members who are qualified and who could help with the investigation of trees. We only have 24 Tree Registration Officers throughout New Zealand, which shows how thinly spread our investigative resources are. A comprehensive national register of trees compiled by R.N.Z.I.H. members will be our best argument for the protection of New Zealand's significant trees. We can be contacted for pamphlets and information by writing to:

The Secretary, R.N.Z.I.H. Notable and Historic Trees Scheme, PO Box 11-379, Wellington.

Note:

The above article was originally published in the R.N.Z.I.H. Journal, 1984, and is reproduced here with the permission of that organization and of the author.



MEASURING A TREE BY THE
INDIAN METHOD (see opposite)

Measuring Trees

Measuring height

Total height is the vertical distance in metres from the highest point of ground at the base of the tree to the highest part of the tree.

For stands of trees give the height of the tallest tree in the stand.

Three methods of measuring trees are given here, arranged in order of increasing accuracy.

The Indian Method.

1. Stand with your back to the tree.
2. Bend over and look at the tree between your legs.
3. Move towards or away from the tree until you can just see the top of the tree. At this point your distance from the tree is approximately equal to the height of the tree.
4. Pace the distance to the tree and convert the paced distance to metres.

The Indian method is based on a 45 degree triangle — length = height.

The visual scale method.

Equipment required — one hand-held scale; one white pole 2 metres long.

Place the pole, or have an assistant hold it, vertically against the base of the tree. The method is based on the relationship between the length of the staff and the height of the tree so it is important to place the staff as close as possible to the base of the tree's vertical axis. Holding the scale vertical at arm's length line the base line of the scale with the bottom of the staff and move backwards or forwards until the top line on the scale is in line with the top of the tree. The approximate height of the tree is the point on the scale that is in line with the top of the staff.

The illustration shows how the method is used. A full size scale is given (divided in half as it does not fit on the page at full size). Copy this scale and glue it to a strip of wood.

Vertical angle method.

Equipment required — a tape measure, an instrument for measuring vertical angles, and a calculator with trigonometric functions (or a set of trigonometric tables).

1. Measuring a tree on level ground.

The height of the tree, H , is the sum of h_1 and h_2 . h_1 is the height of the observer's eyes above ground level, h_2 is the height of the tree above a point on the trunk level with the observer's eyes. h_2 is found by multiplying the horizontal distance from the observer to the tree by the tangent of the vertical angle from the observer's eyes to the tree top.

For example: you are standing on level ground 36 m from the tree to be measured. Measure an angle of 30 degrees to the tree top. To find h_2 find the tangent of 30 degrees, which is 0.577,

and multiply this by the distance from the tree — $36 \text{ m} \times 0.577$ gives a height of 20.77 m for h_2 . Add h_1 (the height of your eyes above ground level — say 1.7 m) and add this to h_2 to obtain the full height of the tree — i.e. 20.77 plus 1.7 = 22.47 m.

Note: check that the ground is level by measuring the vertical angle to a point on the trunk that is the same height above the ground as your eyes. If the ground slopes up or down to the base of the tree use one of the following methods.

2. Measuring a tree on ground that slopes up to the base of the tree.

The height of the tree, H , is the sum of h_1 and h_2 .

In this case, to find h_2 you must find h_4 (the vertical distance between the tree top and the observer's eyes) and subtract from it h_3 (the vertical distance between the observer's eyes and a point on the trunk that is the same height above ground as the observer's eyes);

$$h_2 = h_4 - h_3.$$

To find h_4 and h_3 the horizontal distance from the observer to the vertical axis of the tree, L_2 , must be found. In the example the ground distance from the observer to the tree, L_1 , is 26 m and the vertical angle from the observer to the top of h_3 is 15 degrees. L_2 is L_1 multiplied by the cosine of 15 degrees. In this case;

$$L_2 = L_1 \times \cos 15 \text{ degrees} = 26 \text{ m} \times 0.966 = 25.12 \text{ m}$$

To find h_4 ;

$$h_4 = L_2 \times \tan 40 \text{ degrees} = 25.12 \text{ m} \times 0.839 = 21.08 \text{ m}$$

To find h_3 ;

$$h_3 = L_2 \times \tan 15 \text{ degrees} = 25.12 \text{ m} \times 0.268 = 6.73 \text{ m}$$

To find h_2 ;

$$h_2 = h_4 - h_3 = 21.08 \text{ m} - 6.73 \text{ m} = 14.35 \text{ m}$$

Therefore, to find H (the height of the tree)

$$H = h_2 \text{ plus } h_1 = 14.35 \text{ m plus } 1.70 \text{ m} = 16.05 \text{ m.}$$

Measuring a tree on ground

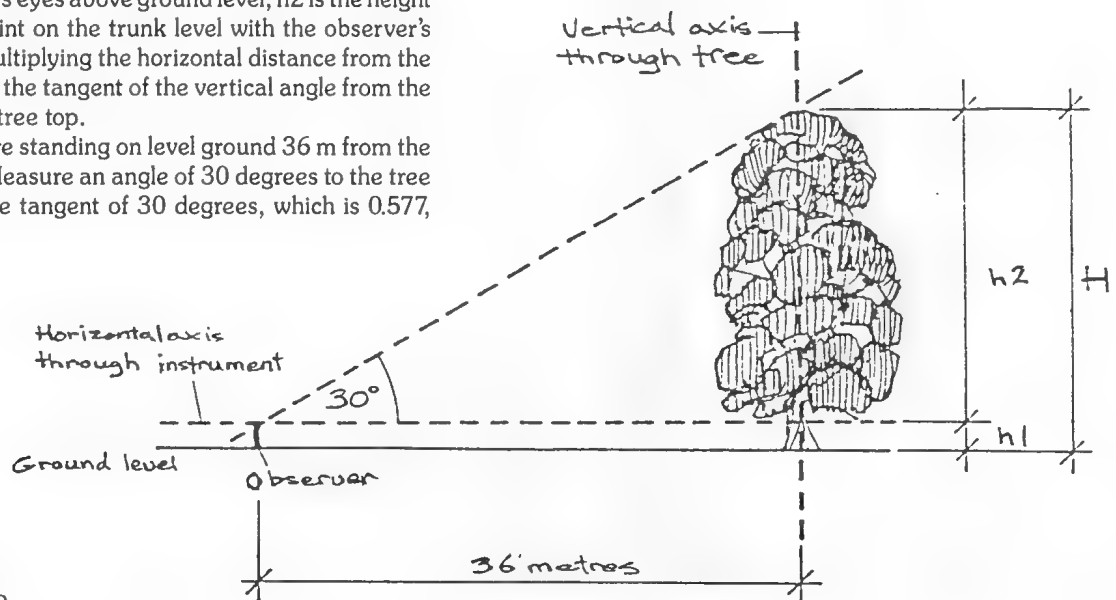
that slopes down to the base of the tree.

The height of the tree, H , is the sum of h_1 plus h_2 plus h_3 .

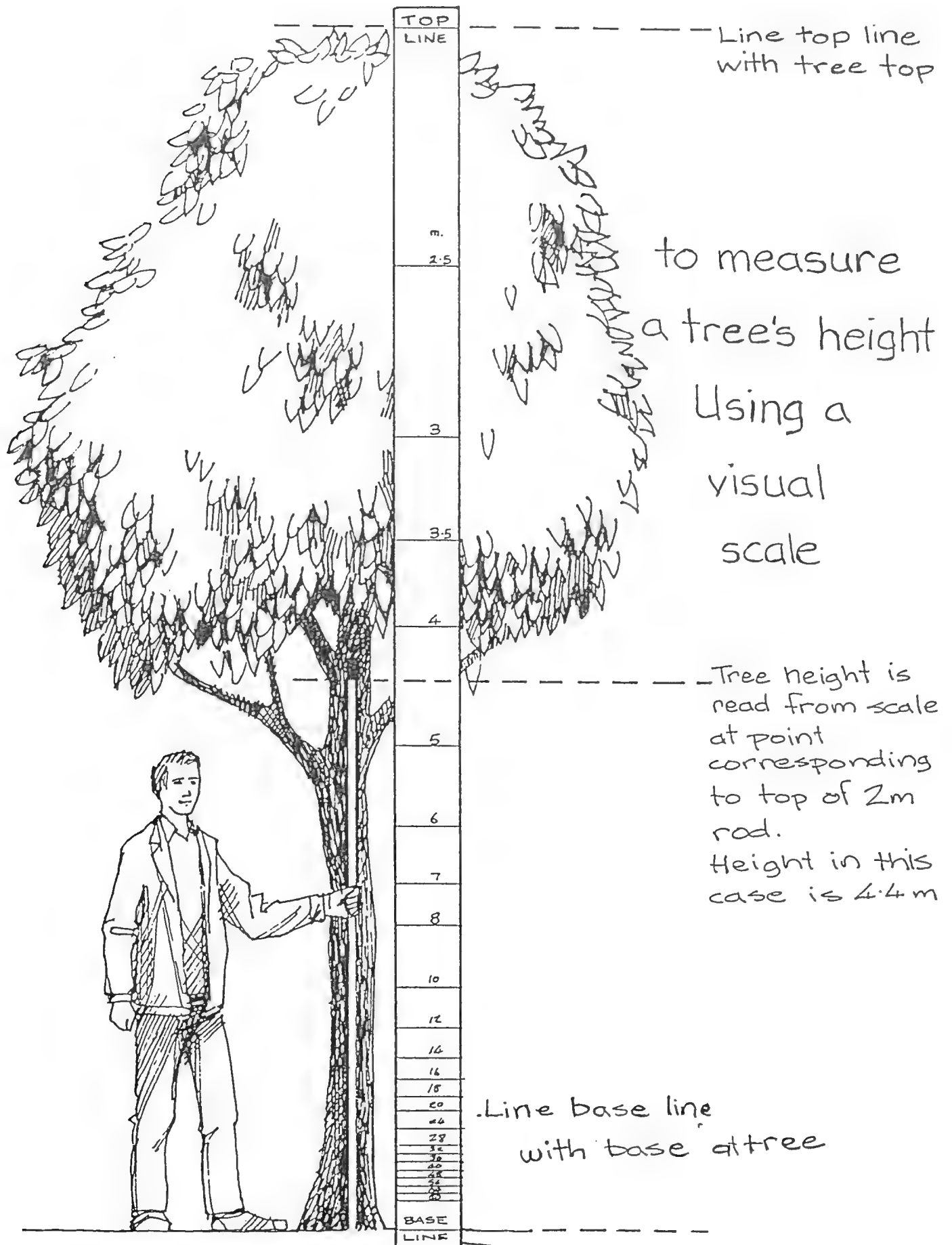
h_2 and h_3 are found by multiplying L_2 (the horizontal distance from the observer to the vertical axis of the tree) by the tangents of 15 degrees and 12 degrees respectively.

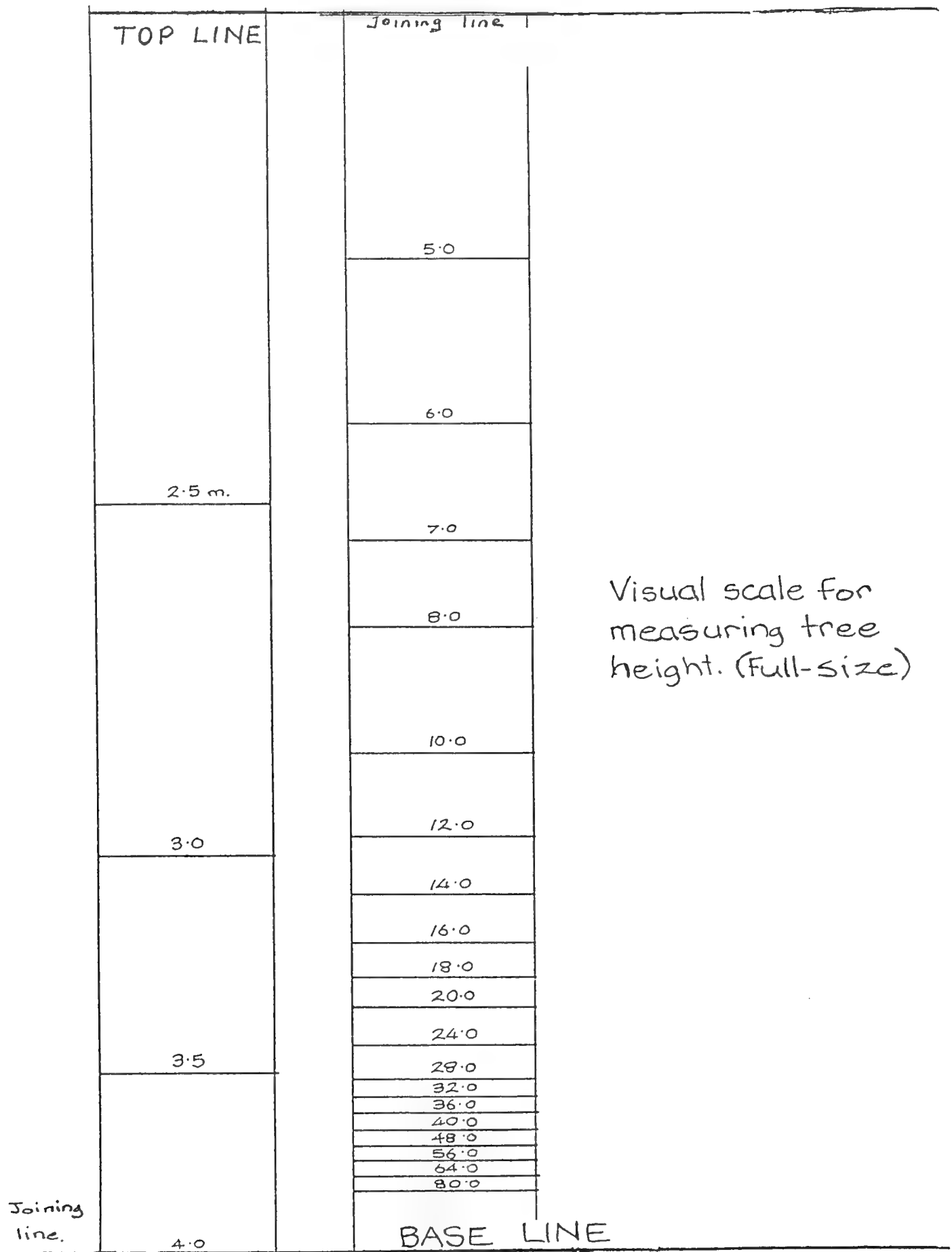
L_2 is found by multiplying L_1 by the cosine of 12 degrees.

Supplying figures to our example;



MEASURING A TREE ON LEVEL GROUND BY THE VERTICAL ANGLE METHOD.





To find L2;
 $L2 = L1 \times \cos 12 \text{ degrees} = 30 \text{ m} \times 0.978 = 29.34 \text{ m}$
 To find h2;
 $h2 = L2 \times \tan 15 \text{ degrees} = 29.34 \text{ m} \times 0.268 = 7.86 \text{ m}$
 To find h3;
 $h3 = L2 \times \tan 12 \text{ degrees} = 29.34 \text{ m} \times 0.213 = 6.25 \text{ m}$
 Therefore to find H (the height of the tree)
 $H = h1 \text{ plus } h2 \text{ plus } h3 = 1.70 \text{ m plus } 7.86 \text{ m plus } 6.25 \text{ m} = 15.81 \text{ m}.$

Measuring trunk girths.

Trunk breadth measurements are generally made at a point 1.40 m above ground level at its highest point. However, low branching or a divided trunk may compel you to take the measurement lower down the trunk. In order to regularize the record keeping and make comparisons between individual trees easier, take trunk measurements at one of the following heights; preferably at 1.40 m (G4), otherwise at 1.00 m (G3), 0.60 m (G2), or at ground level (G1). State the height class (G1, G2, G3 or G4) at which the measurement was taken.

Give the girth of the trunk and don't convert it to a diameter. Trunk breadths are normally expressed as diameter at breast height (dbh). To obtain this the girth measurement is divided by 3.14. This dimension is used in estimating timber volumes and assumes that tree trunks have a circular cross-section which, of course, is not always the case. We are interested simply in the relative size of the trunk and have allowed for girths to be taken at one of four possible heights. Because of this and because it is easier simply to state the girth measurement we have departed from normal practice in asking you to state the trunk measurement as a girth measurement and not a diameter at breast height.

Measuring canopy spread.

Where trees are growing in the open and have spreading crowns measure the spread of the canopy by finding the average of the greatest and smallest widths (tree canopies are not necessarily circular and it could be misleading to give only the greatest diameter).

(Adapted from "Guidelines for Tree Registration Officers" issued by the R.N.Z.I.H. Notable and Historic Trees Scheme.)

Exotic Fruits in Australia

by John and Jacky Marshall

Exotic fruits, with their colourful history and mystique, have fascinated Man since time immemorial. Tales of exquisite tastes, tantalising bouquets, medicinal and even aphrodisical qualities have created such a desire for these fruits that we have gone to unusual lengths to obtain them.

The humble breadfruit tree was once considered more important than the lives of a crew and led to the "Mutiny on the Bounty". Queen Victoria was once reported to have offered 100 pounds to the first person to grow a purple mangosteen. This was eventually achieved under stove-house conditions, but the tree was later exposed to cold weather and died.

The first explorers to South East Asia and Central America returned with fascinating tales of rare and exotic fruits but their attempts to grow them in their own country mostly failed through a lack of cultural knowledge and the long journeys home.

The first introduction of these fruits into Australia occurred back in the 1880s when fruit such as the purple mangosteen, carambola, velvet apple, jak fruit, lychee, longan, mango and some banana varieties were grown in the Cairns, Mossman and Cooktown areas of North Queensland. These first fruits came in with the Kanaka cane cutters, Malay pearl divers and the Chinese gold miners. They also brought in many of the bamboos grown in North Queensland. Except for the mangoes and bananas which became endemic in the area, the other fruits did not flourish and fell into obscurity.

In the early 1970s growers again became interested in exotics as a supplementary crop to bananas, pawpaws and pineapples which were virtually the only commercial fruits being grown in the North. Importation of exotics began slowly at first from SE Asia and then from the Amazon and Central American region and also from Florida and California. Eventually such a flood of

imported plants, grafting material and seeds arrived that quarantine houses from Cairns to Brisbane were overcrowded. All this resulted in the introduction of over 100 new fruits with a total of over 500 varieties. To-day the rate of import has slowed somewhat but the mammoth task of Australian selection has begun.

Mango imports were the most popular, with approximately 200 new varieties, followed by rambutan and lychee, each with about 45 varieties. Next came carambola and sapodilla with approximately 25 varieties, then longan with about 20 and durian and casimiroa with about 15 each.

Australia, particularly Queensland, is now considered to have the best collection in the world of horticultural genetic material. The future looks great, not only for commerce and research, but also for the tourist industry. North Queensland already welcomes hundreds of visitors each year in search of exotic fruits and plants.

Exotics overseas

Rare and exotic fruits overseas have a long history of popularity. Many are still harvested from wild trees, while some, such as the lychee and mango, have been cultivated for over 3000 years.

In most SE Asian countries the cultivation of exotics is now a multi-million dollar industry, employing thousands of workers. Exports are now measured in thousands of tonnes with earnings of many millions of dollars.

Apart from extensive trade between SE Asian countries where peak fruiting seasons occur at different times, the USA and Western Europe are the main export markets for some of these fruits. Durian, mangosteen and rambutan can be purchased in Germany and France in the months of June, July and August. Australia imports fresh durian, mango and lychee. We also im-



left: LONGAN

below left: SAPODILLA

(all photographs reproduced by permission of The Rare Fruit Council of Australia, P.O. Box 707, Cairns, Queensland, 4870).



*above right:
PURPLE STAR APPLE*

*right:
BLACK SAPOTE
(Chocolate Pudding Fruit)*





CARAMBOLA

port canned lychees, longan, mangosteen, rambutan and mango.

Areas in Australia suited to exotics

Exotic fruits originate in many different areas and climates throughout the world, and therefore most areas in Australia would be suitable for at least some of these fruits.

Although the majority of exotics are suited to the northern tropical region, some will withstand frosts down to 8 degrees below zero, provided they go into winter in a hardened condition, and would be suitable for growing in southern States and Western Australia.

These would include casimiroa, Kiwi fruit, feijoa, raisin tree, jujube, carob, Rio Grande cherry, jabotocaba, guava, wampee and jelly palm. Others can withstand frosts down to minus 4 degrees and are suitable for some areas in Western Australia, northern NSW and central and southern Queensland. These are lychee, longan, tamerind, acerola cherry, grumichana, mamocillo and peach palm.

Those suited to the sub-tropics, where temperatures do not usually fall below minus 1 degree would include amberella, carambola, pitaya cactus, velvet apple, mango, black sapote, Governor's plum, madrono, jak fruit, Java plum, Salak palm, Bael fruit, ackee, mamey sapote, star apple, sapodilla, canistel, miracle fruit and abiu. Those suited only to the tropics and with no tolerance to frost are rambutan, pulasan, durian, rollinea, rambai, bread fruit, Malay apple, Fiji longan, Amazon tree grape, ice cream bean, nutmeg and Galip nut.

Australia also has great areas of fertile inland, and providing underground water is available and temperatures permitting, the following may be grown — sapodilla, casimiroa, lychee, longan, mango, black sapote, jujube, pomelo, abiu, star apple, jabotocaba, guava, pitaya cactus, acerola cherry and wampee.

Fruits now being grown in commercial quantities include lychee, mango, rambutan, casimiroa, carambola, purple star

apple, rollinea, jak fruit, abiu, longan, sapodilla and purple mangosteen. Current demand for both fruit and young trees is far ahead of supply, and if lychee is a good example this situation will remain for many years.

Although lychee and mango plantings may be counted in hundreds of thousands, most of the others could be counted only in thousands. Growers appear to be planting mainly those varieties which are already commercial in other countries.

Tastes

When visiting the markets in SE Asia one realises that our western tastes are not always the same as those in the east. Asians seem to prefer sweeter, stronger flavours such as the sapodilla or longan with their high sugar content, and the durian and jak fruit with their stronger smell. In Thailand the less juicy varieties are preferred.

Selection of varieties for flavour and texture has been continuing in the east for a long time, and although this is a reasonable guide, Australian researchers will have to consider that our tastes are different from those overseas.

Exotics as ornamentals

Many of these new fruit trees have attractive foliage as well as flowers and fruit and would enhance any garden. Some are small and bushy such as the miracle fruit, which is most attractive when loaded with hundreds of red berries. Others are climbers, such as the pitaya cactus, with beautiful yellow or red fruit and magnificent large bell-shaped flowers which open at night.

The Malay apple is attractive when covered in beautiful red flowers. The Amazon tree grape has foliage similar to our umbrella tree and bunches of grape-like fruits. Jabotocaba is another tree grape and grows well in any garden. Carambola and cucumber trees are also attractive in the garden. And there are several attractive fruiting palms such as Salak, peach and jelly palms.



JAK FRUIT

Novelty fruit

Many are grown for the novel features of their fruits. The ice cream bean can grow to about one metre in length and contains soft fluffy flesh which is sweet and juicy. The chocolate pudding fruit has a green exterior with dark brown to black flesh which is delicious when eaten with cream or ice cream — a touch of rum or brandy will bring out the chocolate flavour. Many restaurants find it economical to make chocolate mousse from these fruits.

The miracle fruit will astound many. One little fruit will make a sour lemon taste sweet and delicious. In fact anything sour will taste very sweet. The effect lasts for about half-an-hour with no after effects. The strawberry jam fruit can be eaten fresh or spread on bread, and tastes just like strawberries. It is also a very good feed tree for all farmyard birds, including pheasants and peacocks. The Chinese raisin tree has fruit that resemble dead twigs and taste like raisins. The carob tree provides an excellent chocolate-type by-product from its beans. The kepel fruit from Indonesia is reported to make your body smell like perfume! The acerola cherry contains large amounts of vitamin C and is taken to prevent colds.

The Future

Growing exotic fruits has many advantages. At least fifteen of the fruits are already commercial to some extent overseas, and some of these support large industries with substantial earnings. Our peak fruiting season occurs six months away from SE Asia's peak and therefore offers a potential export field for Australia, particularly in lychee, mango, and longan.

This type of fruit growing, properly managed, can offer a supplementary or even an alternative crop for existing growers who are affected by the present down-turn in some rural industries. Reasonable financial returns can be expected to start within four to ten years or longer, but to most fruit growers it is a way of life, and not merely a financial investment.

It is hoped that the industry will grow gradually, as our current markets may be hard pressed to handle a sudden influx of exotic fruits. The industry can be a great tourist attraction, and those cities and towns with foresight to provide a suitable market will benefit enormously.

As many of our older crops become less lucrative, the new exotic fruits will offer a refreshing and rewarding alternative.

(adapted from an article published in *The Rare Fruits Council of Australia Newsletter* no 30 (Jan 1985))

Picture Your Garden Year

by Suzanne Price

Having described at length in an earlier article the planning of garden pictures and the difficulties involved in getting them right, I thought it appropriate to describe some of my favourite pictures. Those I have chosen feature in sequence throughout the year, ensuring at least one good picture at all times.

At the beginning of the year a lovely picture is provided by white Hydrangeas interplanted with Hostas in the background and Bletillas to the front. The large, often variegated foliage of Hostas is always attractive in a shady spot (provided that snails are controlled) and is effective as a weed-smothering ground cover. The tall spikes of pendant, bell-shaped flowers are lovely amongst the Hydrangeas. *H. lancifolia* and *H. fortunei* are generally available, and for a taller spike of deeper mauve flowers, *H. ventricosa* is worth seeking out. I like to mass *Bletilla striata*, the Chinese Ground Orchid, in the foreground, for its spikes of mauve Cattleya-like blooms complete the picture to perfection.

One of my favourite garden pictures is the carpet of pink and white created by interplanting *Cyclamen hederifolium* with *Leucojum autumnale*. The latter is the Autumn Snowflake, which from a small bulb sends up several 15 cm spikes, each having one or two dainty white bells edged with pink. The Cyclamen, previously known as *C. neapolitanum*, has pretty reflexed flowers, 10 cm high, usually in varying shades of pink, and sometimes white. It flowers from the beginning of February until mid-June, while its silver-marbled, ivy-shaped leaves are an attractive ground cover from the end of March until December. During February both these plants are flowering without their leaves, making it a most unusual display. This effect can be achieved in sun or shade, but these plants do seem to colonize more readily in the mulch under deciduous trees.

In early autumn you can have a most attractive picture in a sheltered elevated garden bed or in a large tub. Use a pure white Fuchsia such as "White King", several if space is available, planted with *Gentiana sino-ornata*, the Chinese Ornate Gentian. This is a fine-leaved trailing or mat-forming plant which has large trumpets of very deep blue striped with green. It dislikes light sandy soils, and it must not dry out. If the Fuchsia is tip-pruned during the summer, and if the Gentian has shelter but not too much shade, both will be a mass of flowers in March, providing a blue and white effect that is hard to improve on.

A beautiful pink picture for mid-autumn can be achieved by planting a group of *Euonymus alatus*, the Winged Spindle Bush from Japan. This is a medium-sized deciduous shrub with narrow, dark green leaves which deepen to burgundy and then turn bright pink. At the same time it is covered with pods which split open to reveal bright orange seeds; a startling contrast to the pink leaves. Underneath the Spindle Bushes should be massed with *Nerine filifolia*, a dainty dwarf Nerine with frilly flowers of a very deep pink, and fine grass-like foliage which is often evergreen. If space allows, this picture is even better if it is arranged around and under a Claret Ash, *Fraxinus "Raywoodii"*, for in April its deep burgundy foliage highlights the pink leaves and flowers beneath it.

Coming into bloom during May is a hardy Crocus from the Mediterranean region, *C. serotinus* var. *salzmannii*, which multiplies freely in our climate and flowers profusely provided that it

Edna Walling

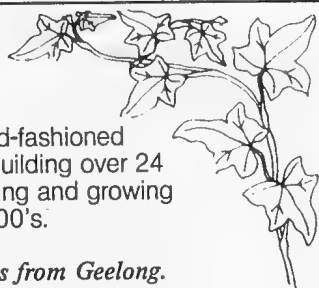
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Picture Your Garden Year (Contd.)

is kept dry in January and February. The flowers are large and of a delicate lilac shade, while the throat is deep yellow. It is available during summer from specialist growers who advertise in our garden magazines. This Crocus is particularly lovely massed beneath *Betula papyrifera*, the Canoe Birch or Paper Birch, a tall slender tree with bark which is much whiter than that of the Silver Birch, and larger leaves which turn to a rich yellow and hold on to the tree for weeks. These serve to highlight the yellow throat of the Crocus.

June can be a dreary month in an unplanned garden. It is important to have some pictures that will feature when the last of the autumn colour has faded and the deciduous trees and shrubs are bare. A very cheering sight at this time of the year is the earliest of the winter-flowering Daffodils, a treasure of the *Narcissus bulbocodium* group called *N. cantabricus*, still sold by specialist growers under its former name *N. bulbocodium foliosus*. It is an elegant, milky-white Hoop Petticoat Daffodil liking a sunny position which is dry in summer. It is very pretty when planted among *Oxalis hirta rosea*, a non-invasive *Oxalis* with large, saucer-shaped flowers of vivid pink, and soft fern-like foliage which makes a dense cover beneath the Daffodils.

July can also be a dull month, and I like to brighten it with a grouping of the earliest blossom, *Prunus mume*, the Flowering Apricot. This only grows to about 2.5 metres and has perfumed flowers in white and various shades of pink. Amongst these I plant several *Rhododendron* "Christmas Cheer", which is the first to flower of the cool climate Rhodos. It has a low, compact habit of growth and many smallish pink trusses of bloom. As a ground cover to complete this picture I mass *Cyclamen coum*, which carpets the ground with shining heart-shaped leaves of deep green and dots the carpet with its sweet dumpy flowers in varying shades from white to the deepest pink.

In August a wonderful sight to see is a massed planting of *Primula vulgaris*, the English Primrose, and *Crocus tomasinianus*.

The Primrose has creamy-yellow flowers with a golden eye and a delicate sweet perfume. Planted beneath a deciduous tree, and not allowed to dry out in summer, it will multiply and cover the ground completely with its crinkly, pale green leaves, providing an interesting contrast to the leaves of the Crocus, which are narrow and dark green with a central stripe of silver. *Crocus tomasinianus* is the easiest to obtain and the easiest to grow of all the Crocuses. It quickly establishes to form a large colony which will have hundreds of silvery-mauve flowers with golden anthers and styles. A massed display of these two plants provides a cream and mauve woodland picture worthy of a place in any garden.

Spring is a wonderful season in most gardens, but the colour can be more effectively used if thought is given to planning for effective groupings. The queen of the blossoms, *Prunus serrulata* "Shirotae" or "Mount Fuji" is widely planted, but rarely is it seen in a picture which will enhance its beauty. I have underplanted mine with a group of *Rhododendron* "Florence Mann", a medium, narrow-growing, very free-flowering Rhodo. Its flower is similar to the much used "Blue Diamond", but a week or two earlier and, to my mind, a better colour. It is a vibrant violet-blue which seems to have an inner radiance of its own, and the effect of it massed beneath the white Cherry blossom is quite breath-taking. This is a picture to which I look forward in anticipation of the other eleven months of the year.

A little later in Spring another of my favourite pictures comes to the fore. I have massed deciduous Azaleas (*Rhododendron mollis* and others) in varying shades from cream through apricot and salmon and orange, carefully avoiding the pinks and the more strident bright oranges and scarlets. As an evergreen backdrop for this picture I use *Rhododendron* "Unique", a hardy Rhodo with a compact habit to 1.5 metres. It has medium-sized trusses which are apricot in bud opening to cream, showing up the deciduous Azaleas perfectly.

By November the main flush of spring colour is over, but your garden can still have a beautiful feature, *Laburnum vossii*, the Golden Chain Tree, which is at its best now. This is a small-growing, deciduous tree which has long pendant chains of golden flowers. It can be espaliered, or trained over a frame work to create a tunnel effect. The latter is probably the most effective way to use this versatile little tree. As a ground cover I like to mass *Convallaria majalis*, Lily of the Valley, for its spikes of perfumed, creamy-white bells are out at the same time. If a little more height is required *Polygonatum multiflorum*, Solomon's Seal, is also very effective, with its gracefully arching stems of white bells tipped with green.

A striking picture for December is one which I chanced upon in my garden. Without realizing that they would flower together I put *Sandersonia aurantiaca* at the rear of a planter box and *Lotus bertholletii* to flow over the edge and down the front. *Sandersonia* is the Christmas Bells of South Africa, a tuberous plant with a winter dormancy needing a very well-drained position. It has half-to one metre stems, sometimes semi-twining. From the leaf axils hang urn-shaped bells 2 cm wide, which are the colour of a ripe mandarin — the Rosellas mistook our first flowers for fruit! The Lotus is a trailing plant with fine, grey foliage and large pea-shaped flowers of scarlet tipped with yellowish-orange. It must have protection from frost, but is otherwise very easy. I would not have thought of combining the colours of these two flowers, but they do create a pleasing effect, both in the garden and on the table for Christmas dinner.

Cottage Garden Notes

by Mary Davis

Approaching the Front Door

As a young bride, many moons ago, I remember reading a book on home making dedicated by an elder married sister to her young sister, and I was impressed by the author's observations on human behaviour, particularly with regard to one's front door. The standards of maintenance, cleanliness and attention to detail are good indicators of, or keys to, the character of the mistress and master, and so it is with gardeners. The lazy by nature show it both within and without. The industrious are exemplified very often by productive fruit and vegetable gardens, well tended lawns with neatly trimmed edges, and a general air of tidiness.

What greets your visitors on the way to the front door? Do they see healthy plants with interesting foliage and flowers which harmonize with the house and with one another, or are they greeted at the front door by an ill assorted collection of pots and containers supporting an equally ill assorted selection of poorly presented plants?

There is a school of thought, arising from illustrations of many English cottage gardens, which advocates no front lawn at all, but the total space between the front gate and the front door to be crammed with flowers. In cities, towns and villages where the house is close to the road this idea may well suit the architectural style of a simple structure, but not every cottage built in this country is sited on a tiny allotment. A green sward of turf may not only be functional but indeed highly desirable in setting off both house and garden.

Many country cottages have wide verandahs, and be they Colonial, Georgian, Federation or whatever it is important to complement rather than hide architectural details with festooning vines and blowsy overgrown shrubs. For this reason the garden beds adjacent to our stone paved verandahs have been planted with a selection of mostly low growing plants suited to a warm northerly aspect broken by three young trees.

An existing semi-mature Jacaranda stands five metres out from the north corner, and following the removal of two very low limbs is now shaping up to have a nicely domed crown. A golden *Robinia* "Frisia", three metres out from the front verandah, and eight metres to the east of the Jacaranda, has been deliberately under-pruned so that its crown will ultimately contrast against the brown corrugated iron roof. The third tree is a *Malus* "Gorgeous", planted in a west facing bed and chosen both for the joy of its colourful fruit and the shadows it will cast across the verandah paving.

The west and north facing garden beds are broken at the corner of the building by a paved ramp, and retained by low walls built of stone which matches the house. Large rectangular stepping stones lead across the front lawn from the drive to a broad verandah step, and either side are deepish beds of plants which give great pleasure both to visitors and to ourselves.

Here *Lavendula dentata*, Felicia daisies and tall bearded iris intermingle with miniature and old-fashioned roses of the small bloomed types. I refer to dwarf Cecil Brunner, white Cecil Brunner, and Perle d'Or. The miniatures are a mix of old and new, the old being Lady Brisbane, a deep red which barely rests, even in winter, the Angel Rose, a lavender pink double obviously descended from *Rosa chinensis*, and two delightful simple singles, one pure white and the other like apple blossom, which were given by a dear friend but alas both unnamed.

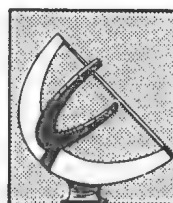
Roy Genders, writing on Cottage Gardens and Old-fashioned Plants, suggests that perfumed plants, particularly those whose fragrance is intensified after dark, should be placed near doors and windows or beside pathways close to the house. This is an idea I commend, but with certain reservations. *Murraya paniculata* can be overpowering on a still night even ten metres away, and *Cestrum nocturnum* under a window could be equally so.

On one side of the ramp in a hot corner *Heliotropium arborescens* "Lord Roberts", known simply as Cherry Pie, has been planted, and on the other *Jasminum nitidum*, which is a scrambler but with judicious pruning can be kept in bounds. It has attractive deep green foliage and produces a succession of white sweetly perfumed flowers which open from a burgundy coloured bud.

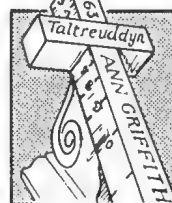
Behind the *Malus*, which is but a stripling at present, and against the verandah foundation wall are three *Bouvardia humboldtii*, again planted for their rich fragrance, and a pink scentless *B. ternifolia* hybrid. All are high-lighted by a group of *Aster frickarti*, whose soft mauve-blue daisies open in abundance and last for almost six months. I realise that a severe frost might spell death to my Bouvardias, but to quote Graham Stuart Thomas, "Gardening is opportunism".

Sundials

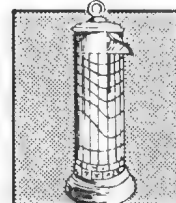
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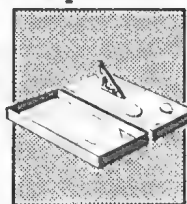
Equatorial



Cross



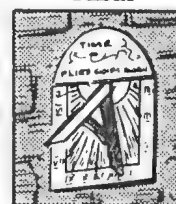
Pillar



Pocket



Horizontal



Vertical Wall

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AUSTRALIAN GARDEN HISTORY SOCIETY

Patron: Dame Elisabeth Murdoch, D.B.E.

Chairman: Mrs J.E. Mitchell

Secretary: Mr Tim North, PO Box 588, Bowral, NSW 2576

Treasurer: Mr Ken Digby, Shorebrace, Stokes Point, NSW 2107

All correspondence to be addressed to the Secretary.

Executive Committee

Under the Society's Constitution the following members of the Executive Committee, having served continuously for three years, are due to resign this year, but may offer themselves for re-election: Mr M. Hurburgh (Tas), Mrs J.E. Mitchell (Vic), Dr J. Brine (SA) and Mr T. North (NSW).

Nominations for vacancies on the Executive Committee, duly signed by both proposer and seconder, should reach the Secretary not later than 1st October 1985. Both the person nominated, and the proposer and seconder, must be financial members of the Society for 1985/86.

Annual General Meeting

Notice is hereby given that the fifth Annual General Meeting of the Australian Garden History Society will be held at University House, Australian National University, Canberra, on Saturday 26th October 1985, at 8.0 pm.

Format for future Annual Conferences

The Victorian branch of the Society has put forward a recommendation to change the format of the Annual Conference to accord with the considerable increase in membership. The two specific proposals are:

1. That the Annual Conference should revert to the format of the inaugural conference, with a more typical conference structure — say two days of papers and proceedings and one day for tours. The location and tours format should be such that there need not be such tight constraints on numbers attending as previously. To coincide with this changed emphasis the Conference should be held in late autumn.

2. That all active States should organize a two to three day spring programme, principally focussed on garden tours but also with at least one session for papers, and perhaps a State AGM.

These proposals will be debated at the AGM this year, but in the meantime members are invited to forward any views, either for or against the proposals, to the Secretary, and such views will be taken into consideration when the matter is debated.

Lecture Tour — Professor Sun Xiaoxiang

A report on Professor Sun's lecture tour, which took in all capital cities and was jointly sponsored by the A.G.H.S. and the Australian Institute of Landscape Architects, will be included in the October journal.

Subscriptions

Members are reminded that all subscriptions fell due for renewal on 1st July 1985. Renewal notices were included with the June journal. Any member who has not yet renewed is asked to do so as soon as possible.

New Zealand Heritage Gardens Tour

A leaflet on this tour was circulated to all members with the June journal. There are still some vacancies on the tour, which runs from 29th October to 7th November. Further particulars, including a detailed itinerary, are available either from Mr Ken Digby, Shorebrace, Stokes Point, NSW 2107, or from Allways Travel Pty Ltd, 82 Elizabeth Street, Sydney, 2000 (tel (02) 235.1022).

Prize for Historic Garden/Landscape Study

The Society will offer, during 1986, a prize of \$500 for the best survey and report on a historic or significant garden or landscape, anywhere in Australia, by a student, either full-time or part-time, at a recognized tertiary educational establishment.

Entry forms will be available from the Secretary during September.

Submissions will be judged by a panel of five judges, which will include Professor R. Clough (Professor of Landscape Architecture, University of New South Wales), Miss Catherin Bull (President, Australian Institute of Landscape Architects), Mr Howard Tanner (architect and past Chairman of the A.G.H.S.), Mr Peter Watts (Director, Historic Houses Trust of New South Wales) and Mr Tom Garnett (Garden Editor of the Melbourne "Age").

State News

Victoria

The telephone number of Miss Francine Gilfedder, Secretary of the Victorian branch, which was omitted from the details of State branch representatives in the June journal is (03) 328.2790 (a/h only).

Tasmania

The Annual General Meeting of the Tasmanian Branch will be held in Ross Town Hall on Sunday 25th August, at 11.0 am. The guest speaker will be Professor Carrick Chambers, Professor of Botany at the University of Melbourne, who will speak on "Maintaining some historic gardens, with special reference to the dilemmas of managing notable but over-mature landscapes". Cost per person (including lunch) — \$8.00. RSVP by 16th August to Mrs Rosemary MacKinnon, (003) 92.2210, or Mrs Zoe McKay, (002) 48.5139.

On Wednesday 25th September there will be a visit to the garden of Mr and Mrs D. Morris at Fern Tree. This garden is noted for its alpine and rhododendrons, and has been recreated by the owners after being burnt out in the 1967 bushfires. Meet at Fern Tree Tavern car park at 10.30 am for registration and directions. Cost — \$2.00 for members, \$3.00 for non-members.

On Sunday 6th October a Family Day will be held at Richmond. Assemble at the car park below Richmond Gaol at 10.30 am. At 11.0 am Mr Peter McFie will lead a walk round the township, starting and ending at the car park. BYO picnic lunch on the banks of the river near the car park. There will be a plant trade table, for which contributions will be welcome. At 2.0 pm, walk or drive across the river to the Millhouse, home of Mr and Mrs Brodbribb, to view the garden; then across the bridge and walk to Economy House, home of Mr and Mrs Ross, via some interesting gardens which can be viewed from the roadside. RSVP to Mrs R. MacKinnon or Mrs McKay (see above); cost \$2.00 for members, \$3.00 for non-members.

New South Wales

Sunday 15th September — "Gardeners' Gardens", an inspection of four gardens in the Berry/Shoalhaven area, starting at 10.0 am and finishing at approximately 4.0 pm. Picnic lunch (BYO) in Keith and Edith Faulks' garden, where two short talks

will be given, one on "Unusual Bulbs", by Leo Cady, the other on "Old Roses", by Peter Cox. Members will be limited to **one** guest each on this occasion; tickets \$4.00 for members, \$6.00 for non-members; apply to Mrs Edith Faulks, RMB 878 Croziers Road, Berry, 2535; tel (044) 64.1097.

Sunday 29th September — "Landscaping in Miniature", within ten acres of the Anglican Villages at Castle Hill, by kind permission of the Nuffield/Hopetoun Garden Club. The afternoon will start at 2.0 pm with a short talk by Mrs Eula Ockwell; the party will then split into small groups for an inspection of Lober House, the original house and garden on the property, formerly the home of Mr and Mrs Dixon. After that a drive round the six villages to see the individual unit gardens and the display of spring flowers. Bring your own afternoon tea (hot water will be available) which can be enjoyed in "The Glade". All members and their friends (including children) will be welcome; tickets \$4.00 for members, \$6.00 for non-members; apply to Mrs Keva North, PO Box 588 Bowral, 2576, tel (048) 61.1884.

BOOK REVIEWS

The Australian Garden

*by John Patrick; published by Thomas Nelson Australia; recommended retail price \$29.95.
reviewed by James Hitchmough*

On stumbling upon "The Australian Garden" one might be forgiven for thinking "Yet another one for the coffee table". Turn a few pages and read just a few paragraphs and you will soon appreciate your error.

Unlike too many of its predecessors, this is not just a collection of lavish photographs, but an anthology of garden makers, the factors that have shaped their gardening philosophies, and, naturally, the end product, their gardens. It is a book which appeals both to head and heart, one to which you will continue to return long after you have tired of the colour plates.

I rarely read prefaces or introductions, which so often seem little more than literary etiquette, but in this book the author uses the introduction as a vehicle with which to expound his philosophy on gardening and garden design, providing the frame or reference by which to evaluate the real success of the thirty-three gardens that follow.

The gardens themselves come in all shapes, sizes, and styles, ranging from the classical lines of Bolobek, the creation of Lady Law-Smith, to the rather more organic, ad hoc splendours of the Miner's Cottage at Moonta. Plantsmen's gardens, in which the challenge of cultivating rare and exciting plants has precedence and where design must play second fiddle, are separated by elegant, culturally inspired works (work is the most appropriate term) such as Polly Park's garden in a Canberra suburb.

Even the ardent horticultural monoculturist is catered for, as the splendid, and to some splendidly eccentric South Australian iris garden testifies.

Only two of the gardens are exclusively native in content — a true bush garden on the outskirts of Sydney and Karwarra in the Dandenongs, a network of meandering trails through skilful and tightly controlled compositions of ground covers and shrubs. Native plant enthusiasts will doubtless be disappointed that so

few have found their way into these pages, especially bearing in mind that the text addresses itself to contemporary Australian garden design at a time when native plants comprise 50% of all nursery sales.

That gardens containing introduced plants dominate this book owes less, I suspect, to the author's prejudices than to the fact that despite their widespread popularity there are relatively few native plant gardens of real quality. Too often the potential of indigenous plants is wasted by the need to conform to an overbearing bush garden ethic. I think Tommy Garnett's attempt in his garden at Blackwood to reconcile and utilise the design qualities of both native and introduced plants is a laudable example. Had the revered Ms Jekyll and her disciples known of, and been able to grow the likes of *Eucalyptus caesia*, *Guichenotia macrantha*, *Dampiera teres* and *Banksia grandis* then their, and presumably our mixed borders would be overflowing with these beautiful and uniquely sculptural plants.

It is pleasing to see that both author and publisher have resisted the in vogue temptation to insert the word "great" or any similar epithet into the title. Such an omission allows one to enjoy the gardens without experiencing the feeling that all are not clearly "great", either in a national or international context. Gardens can be successful or even a triumph for their creators and the reader without being "great".

As for my criticisms, I have but few. The colour plates are, with the notable exception of those of Leura, both purposeful and of good, in some cases excellent, quality. Many of the plates seem to highlight the visual quality that can be achieved by the thoughtful composition of otherwise mundane plants. The inclusion of a scale, and perhaps some shading to help those not accustomed to plan interpretation would improve the rather thin line drawings of garden layout.

"The Australian Garden" presents a montage of contemporary garden design, and with its intelligent and articulate text will doubtless become regarded as a significant addition to Australian garden literature. What binds its author, gardeners, and gardens together is a scholarly enthusiasm for their craft. Whether one yearns to create a garden akin to the technicolour brilliance of Wittunga or the period charm of Heide, to succeed one must embrace this philosophy. In the words of the eminently quotable Christopher Lloyd, "Effort is only troublesome when you are bored".

Book Reviews (continued)

Floral Emblems of Australia

by Anne Boden; published for the Australian National Botanic Gardens by the Australian Government Publishing Service.

reviewed by Tim North

Strangely, although each State has its own floral emblem, as does the Northern Territory and the Australian Capital Territory, Australia does not have a national floral emblem. Nor, for that matter, does the United States. The Golden Wattle, *Acacia pycnantha*, is usually regarded as our national flower, but in fact it has never been proclaimed — an omission which perhaps can be rectified before 1988.

This is one of the many interesting facts to be gleaned from this totally delightful — and one is tempted to add, long overdue — little book on our floral emblems. I have to admit that it reminded me sharply of my own ignorance — I did not, for instance, know that the floral emblem of the Northern Territory (proclaimed in 1961) is that very pretty flower called Sturt's Desert Rose (now *Gossypium sturtianum* var *sturtianum*); nor did I know that the A.C.T. has adopted (as recently as 1982) the Royal Bluebell, *Wahlenbergia gloriosa*.

Anne Boden is to be congratulated on producing a highly informative, well written and extremely well illustrated booklet. Her introduction, which takes us quickly through the early symbolism of flowers and plants, including their use in heraldic insignia, and more recently on postage stamps, is as concise and as readable as anyone could wish. She then describes, equally concisely, the history, ecology and cultivation of the various State and Territory floral emblems.

Buy yourself a copy to-day — you won't be disappointed. I wonder — can **you** describe each one of our floral emblems?

Nursery Notes

by Keva North

Not without reason has Cairns and the surrounding district been called "The Greenhouse of Australia". A winter temperature of around 26 degrees Celsius, high summer rainfall and high humidity, make almost ideal year-round growing conditions.

Many local nurseries send plants — ferns, palms, bougainvilleas, orchids and foliage plants in particular — all over Australia. Twenty-one of the larger wholesale growers have now formed a trading and marketing group, with cooperative advertising, packaging, etc, called Cairns Plant Wholesalers.

One of the oldest established nurseries in North Queensland is Limberlost Nursery, at Freshwater near Cairns. John and Sybil Jones started the business in 1952 as a fruit farm, but four years later a cyclone struck. They re-started as an orchid nursery, based on John's private collection, and since then over a hundred hybrids have been developed and registered.

In 1970 Limberlost gained a name all over Australia with their introduction of four new double Bougainvilleas — one of which was the now familiar, white pink-tipped "Limberlost Beauty". To-day the nursery specializes in exotic fruits — they list more

than a hundred different types — bougainvilleas, orchids and tropical flowering plants. Both wholesale and retail sales are catered for and the nursery has an extensive mail-order business. John and Sybil are now helped by their two daughters, Robyn and Linda. The name was taken from a 1900 novel called "Girl of the Limberlost" and means "a place where everything grows to perfection".

Plant lists can be sent on receipt of a stamped, self-addressed envelope; the address is Limberlost Nurseries Pty Ltd, PO Freshwater via Cairns, Qld. 4870.

At Clifton Park Nurseries, Clifton Beach (on the Cook Highway just to the north of Cairns) Carol Shipway and Kim Morris specialize in bougainvilleas. They have on display an extremely wide range of cultivars, including recent introductions from overseas. Their business is mainly wholesale but they sell retail to passing trade. Plants are sold in all sizes from 50 mm tubes up to tub size. Kim Morris is currently Chairman of Cairns Plant Wholesalers.

Panorama Nursery at Redlynch specializes in palms and dracaenas, and have a large range of super-advanced plants. Particularly impressive were some good specimens of the Golden Cane Palm, *Chrysalidocarpus lutescens*, a good palm for indoors. Dracaenas include the very beautiful *D. marginata* "Tricolour" and the less common *D. goldieana* and *D. honiara*. Both wholesale and retail trade is catered for. Proprietors are Bob and Pam Griffiths.

At Barrier Reef Nursery, on the Bruce Highway at Deeral, south of Cairns, Arthur and Carol Stroud specialize in ferns, both native and exotic species, and have one of the largest ranges of any nursery in Australia. Their trade is wholesale only, with the majority of their plants going to Adelaide and Perth. Most of these go out as tube lines, and the Strouds will shortly be going into tissue culture. Arthur Stroud is particularly interested in introducing many of the ferns indigenous to the area into cultivation. A free advisory service is offered on all aspects of fern care and culture.

Two other ventures, though not strictly nurseries, must be mentioned. These are The Hidden Garden at Mission Beach, south of Innisfail, and Tinaroo Orchids, at Lake Tinaroo on the Atherton Tablelands.

Bruce and Lynn Shepherd started to plant their Hidden Garden — one and a quarter acres of forest adjoining their banana and pineapple plantation — eight years ago. Now, firmly established in almost ideal natural growing conditions, are more than forty species each of *Dieffenbachia* and *Calathea*, more than fifty *Philodendrons* — some of them have reached a height of ten metres or more up the tall forest trees — thirty species of *Aglaonema*, as well as many smaller species, such as *Maranta*, *Fittonia*, and so on. If you are lucky you may see a Cassowary walking through this hidden garden. Visitors are invited to walk through the garden and the adjoining plantations. Tropical fruits are on sale in season.

Tinaroo Orchids was acquired by Gordon and Rae Matthews several years ago, and is now a well known tourist attraction on the Tablelands. On entering, one first sees the spectacular New Guinea climber, *Tecomanthe* sp, past which is an area densely planted with *Anthuriums*, tassell ferns and tropical foliage plants. The orchids are displayed in a number of enclosures — enormous *Cattleyas*, white and pale pink *Phalaenopsis*, tiny *Oncidiums*, *Calanthes*, *Dendrobiums* of all kinds — the only protection they need is from the torrential summer rain!

These are just a few of the many interesting nurseries in this part of North Queensland.

Letters

Mr T. North,
Editor, Australian Garden Journal.

Dear Mr North,

The letter by Frances Kelly in the April issue of the Australian Garden Journal raises many questions. I would comment as follows.

The eucalypts are an evolutionary group with a long history, dating from the early development of Australia's flowering-plant flora. That they have evolved and diversified to form such a large number (about 700 species) is part of the evidence for their considerable age. Thus they are not "weeds" that have recently "overrun the Australian landscape". However, they regenerate after fire more readily than do many other plant groups and a high frequency of bushfire leads, in some environments, to eucalypts becoming more widespread at the expense of other vegetation.

The effects of Aboriginal use of fire over a long period have tended to favour the eucalypts in those sites where either eucalypts or denser forests could exist but where fire tipped the balance towards the eucalypts. Where eucalypt and rainforest occur in adjacent sites, as at Barrington Tops, Antarctic Beech forest (a form of montane rainforest) is tending to replace eucalypts in some sites in the absence of fire. However, rainforest cannot grow in very infertile soils, so there are many places where only eucalypts and their associates would have occurred in the past — as well as in the present. Where European settlers cleared the vegetation, any regrowth has usually been of the same type as the original vegetation. In the extensive former rainforest of the Big Scrub near Lismore, the few relics now found are rainforest species — eucalypts do not move in. The same characteristics that enable eucalypts to cope with bushfires help them to regenerate after clearing in some situations, but the present abundance of eucalypts is not a result of clearing during the last 200 years and only to a limited extent does it result from changes wrought by Aboriginal man.

Many eucalypts do obtain water from deep in the soil. Some have been used for draining swamps, but poplars have been used in the same way. The ability of eucalypts to "drain" soil water is very beneficial in places where a rising water-table leads to increased salinity. This is a serious problem in some districts (see "Wildlife in the Home Paddock", by Roland Breckwoldt, published by Angus and Robertson).

The composition of eucalypt leaves makes them resistant to some of the organisms that decompose plant material into humus. I believe that it is partly because of this that they have a poor reputation as humus producers in countries where the soil organisms are not adapted to them. Therefore, where eucalypts are planted in foreign countries they commonly have a reputation for leading to soil impoverishment. This is less the case in Australia where a complex of insects, fungi and other organisms are adapted to them. In some areas, as in parts of India and China, the effect of planting eucalypts is commonly exacerbated by the collection of all twigs and leaves falling under them for fuel, preventing the return of nutrients and organic matter to the soil.

Australia's vegetation was less dominated by eucalypts and had larger areas of rainforest during those periods in past times when there was a wetter climate in this region of the world. But for rainforests to grow in many of the areas now occupied by

eucalypts would require the addition of massive amounts of fertiliser. Such additions, rather than the present situation, would give an imbalance and could lead to disastrous consequences for other types of wildlife. Addition of nutrients would cause great change to the waters of our rivers and to the surrounding land.

Human history and ecology teach us to be wary of seeking to impose great changes on our environment. The clearing that has occurred during recent decades worldwide is an environmental disaster; let us not compound it with further change, however well intentioned. So often the changes observed over a short period do not indicate the full extent of the deleterious consequences over a longer time span and I urge that we should not consider a programme to "re-forest" with other species in the hope of obtaining a "greater percentage of rainforest cover".

Rainforests are indeed treasured and beautiful areas and much to be valued in their place; we should attempt to retain all areas of natural rainforest.

Worldwide, eucalypts are Australia's greatest contribution to meeting human needs through plants or animals. They include some of the fastest growing plant species and are therefore much planted abroad for timber and fuel. Recently there has also been a study of the extent to which she-oaks can contribute to world production of wood. In the developing countries much pressure is put on the local flora by the gathering of wood for fuel. Fast growing plants such as eucalypts are efficient fuel crops and so reduce the pressure on native forests.

Frances Kelly makes reference to Australia's forests being dominated by one genus, *Eucalyptus*. Modern botanical opinion, although not unanimous, tends towards the recognition of several genera among the diverse group of eucalypts.

A useful reference on some of these subjects is "A History of Australasian Vegetation" edited by J.M.B. Smith and published in 1982 by McGraw-Hill Book Company.

B.G. Briggs,
Senior Assistant Director,
Royal Botanic Gardens Sydney.

(other correspondence on this subject has had to be held over to next issue)

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Alfalfa Meal

Alfalfa meal, although it contains little in the way of macro or micro nutrients, has been found to contain a growth stimulator called triacontanol. A rhododendron breeder, writing in *The American Rhododendron Society Journal*, reports "fantastic results" from feeding seedlings with alfalfa meal tablets in solution. Seed from three crosses of the dwarf *R. yakushimanum* sown in February 1982 and potted up in September were 4 to 6 inches tall by the following January. Over the next six weeks they were fed five times with alfalfa meal, 5 tablets per gallon of water applied at the rate of half-cupful per 155mm pot, the only other feeding being Osmocote 14-14-14 in early spring. By mid October 1983 the plants were 16 inches tall, with good branching and stems up to half-an-inch in diameter. Repotted into 3-gallon pots and with one further feed each of alfalfa meal and Osmocote, by October 1984 the plants were 17 to 27 inches tall, and almost all had flower buds.

Spring School for Home Gardeners

The Sixth Annual Mount Buffalo Spring School of the Royal Horticultural Society of Victoria will be held at the Chalet, Mount Buffalo, from 30th September to 4th October inclusive. Speakers will include Kevin Heinz, Allan Seale and W. Rodger Elliott. The registration fee, which includes shared room with private facilities and all meals from Monday evening dinner to Friday morning breakfast inclusive, is \$280.00. Registration forms are available from: The Royal Horticultural Society of Victoria, 418a Station Street, Box Hill South, Vic. 3128, telephone (03) 898.7646.

Adopting a fruit tree

A forester in America has suggested that food-producing trees and shrubs be given as gifts at Christmas, birthdays and other occasions. Children especially would benefit, he says, by learning more both about the natural world and about good nutrition, at the same time developing a sense of responsibility in caring for the plant and harvesting the crop. He suggests that personalized papers could be provided with each plant, as is done with Cabbage Patch dolls.

Rare Fruits in New South Wales

Niall M. Carney, of East Kurrajong, writing in the Rare Fruits Council newsletter, states that besides kiwifruit and avocados he is experimenting, with some success, with Casimiroa, Pepino, Feijoa, Tamarillo and Blueberries, in addition to the odd experimental plant of Jujube, Kaffir Plum, Naranjilla, Tea, Guava, Persimmon, and Custard Apple. He goes on to say that the climate in his district seems suitable for Asian pears, although rainfall is a limiting factor.

He feels that a branch of the Rare Fruits Council should be formed in the south, and invites any interested person to contact him with a view to an occasional meeting. His address is:

Mr Niall M. Carney, Azetene, RMB 250, Singleton Road, East Kurrajong, NSW 2758; telephone (045) 76.3285.

Sydney Garden Fair

The Sydney Garden Fair will be held at Hawkesbury Agricultural College from 6th to 8th September. Sponsors include the N.S.W. Association of Nurserymen and Hawkesbury College. The fair will present the latest in gardening technology, and products suitable for large and small gardens from window boxes to glasshouses.

Open Day at Wirrimbirra Sanctuary

An open day will be held at Wirrimbirra Sanctuary, situated on the Hume Highway between Bargo and Tahmoor, on Sunday 15th September, commencing at 9.45 am. This will provide an opportunity for easy bush walks, and to view the displays, services and facilities provided by this National Trust property, managed and financed by the David G. Stead Memorial Wildlife Research Foundation for public enjoyment, education and nature conservation. A "sausage sizzle" lunch will be available, at a cost of \$3.00 per head, but this should be ordered in advance from the Manager, Wirrimbirra Sanctuary, Hume Highway, Bargo, N.S.W. 2574, telephone (046) 84.1112.

International Protea Conference

The Third International Protea Conference of the International Protea Association and the First International Protea Research Symposium of the International Society for Horticultural Science will be held in Johannesburg and Cape Town, South Africa, from 25th August to 1st September 1985.

♪ EVERYTHING THAT GROWS
♪ GROWS BETTER
♪ WITH A LITTLE DROP OF

Maxicrop

available from leading garden centres

garden market place

NURSERIES - GENERAL

BRYANT'S NURSERY AND 'The HERB GARDENS OF ABELOUR', Victoria St, Yass, NSW 2582. Tel: (062) 26 2175 - Growers of the highest quality Hardy trees, shrubs, cottage plants and herbs. 2½ acres of display gardens. Retail only. Closed Tuesdays.

INVERGOWRIE FARM NURSERY, Wilson's Lane, Exeter, NSW 2580. Tel: (048) 83-4277 - Extensive range of exotic and ornamental trees and shrubs, including conifers, maples, rhododendrons and azaleas. Many grafted lines. Tube to advanced sizes. Wholesale and retail.

SWANE'S NURSERY, 490 Galston Road, Dural, NSW 2158. Tel: (02) 651-1322 - Where nature tends to grow on you! - Suppliers of quality trees, shrubs, roses, fruit trees, seedlings, indoor plants and a comprehensive range of chemicals and fertilizers to home gardeners. Qualified advisory staff on duty 7 days a week from 9am to 5pm. - Ample parking, light refreshments and beautiful gardens to make this a delightful nursery to visit.

WIRREANDA NURSERY, 169 Wirreanda Road, Ingleside, NSW 2101. Tel: (02) 450-1400 - Top quality, super value trees and shrubs, ferns and indoor plants direct from the grower. Stunning assortment of Australian natives and exotics to choose from, including many species rare and unusual. Turn off Mona Vale Road at Tumburra Street, Ingleside, and follow signs to Nursery. Open 7 days.

NURSERIES - SPECIALIST

BUNDANOON VILLAGE NURSERY, 71 Penrose Road, Bundanoon, NSW 2578. Tel: (048) 83-6303 - Scented plants, herbs, cottage garden and useful plants. Visit us for the rare and the unusual. Two hours drive from Sydney and Canberra in the Southern Highlands. Closed Tuesdays & Wednesdays. No mail orders or catalogue.

FUCHSIAS FROM LESLEY BUTLER, 21 Alphington Street, Alphington, Victoria, 3078. - Inspection and sales by phoning (03) 481-3094 for appointment. Large collection of old and new varieties. Detailed catalogue. \$1.50 posted.

HERBS, OLD FASHIONED PLANTS & TROPICAL FRUIT TREES, 18 Eastview Road, Church Point, NSW 2105. Tel: (02) 997-5402 - Large variety of basil, lavender, scented geraniums, lace, scented gifts, pot-pourri supplies, cottage garden seeds. **FRUITS:** Babaco, durian, mangosteen, lychee, jackfruit, over 20 varieties. SAE free catalogue. Mail orders. Retail trade. Ring for appointment.

JASPER PARK NURSERY, Croziers Road, Berry, NSW 2535. Tel: (044) 64-1097 - Specializing in rare and unusual trees, shrubs and conifers, also natives. Stroll around 1.2ha garden. Devonshire tea served in garden for buses or parties on prior arrangement. Closed Tuesday and Wednesday except by appointment.

RAINBOW RIDGE NURSERY, 8 Taylor's Road, Dural, NSW 2158. Tel: (02) 651-2857 - Iris and Day-lillies. Bearded, Louisiana, Japanese Iris, species and water Iris. Tetraploid Day-lilies. Visit us at bloom time October, November and December. Turn off Galston Road at Carter's Road, just past Swane's Nursery. Thousands of different Iris and a large rose garden.

THARWA PROPAGATION NURSERY, 21 Myoora Road, Terrey Hills, NSW 2084. Tel: (02) 450-1967 - Tubestock for home gardens and landscaping makes good cents. Native and exotic trees, shrubs, climbers and groundcovers in deep 'super-tubes' ready to plant in your garden. Most varieties \$1.20 each, every tenth plant free. Open 7 days, 9am to 5pm.

WILLUNGA HERB NURSERY and GARDENS, Bong Bong Hill, Moss Vale, NSW 2577. Tel: (048) 911-535 - We specialize in rare and unusual Perennials, Cottage Garden Plants, Lavenders, Culinary and Medicinal Herbs, Fragrant Shrubs, Dried Herbs, Books, Herb Posters, Sleep Pillows, Herbal Gifts - Open 6 days 10am to 5pm. Closed Tuesdays. Semi herb gardens for your enjoyment.

SEEDSMEN

SPECIALITY SEEDS, P.O. Box 34, Hawkesburn, Victoria, 3142 - Specialty Seeds is the main Australian agent for Suttons Seeds. At present we have over 700 seed lines in stock. These include many old fashioned favourites like Suttons famous old fashioned sweet peas, and individual colours like Suttons white or cream sweet peas. Seeds for the flower garden, the kitchen garden, and for the first time the wild garden. Our new range of British wild flowers is now available. Catalogue \$2.50.

BOOKS ETC.

HORTICULTURAL BOOKSHOP, Shop 22, Mooroolbark Terrace, Brice Avenue, Mooroolbark, Victoria, 3138. Tel: (03) 726-9833 - Comprehensive range of horticultural publications. Mail order service available. Horticulture and Leisure services in the school shop for the Australian Horticultural Correspondence School. Also, see us for seeds, gardening products, courses, workshops etc. A shop run by professionals.

JOHIMA BOOKS, Village Arcade, Hillcrest Road, Pennant Hills, NSW 2120. Tel: (02) 84-6576 - Specialist horticultural and agricultural bookshop; from 'A' from African Violets to 'W' for Weeds. Mail order service. Send SAE for catalogue.

MULINI PRESS, P.O. Box 82, Jamison Centre, ACT, 2614 - Books about Gardens and Gardening. Books both small and large on Australian Garden History. Send for a catalogue post free to Mulini Press.

GARDEN DETAIL

UNDERWOOD GARDEN DETAIL, 7 Victoria Avenue, Albert Park, Victoria, 3206. Tel: (03) 690-7794. A unique shop offering pots, furniture (antique and new), garden tools, books. Wonderful gifts for that special garden. Open Tuesday to Friday 10am to 5pm. Saturday 10am to 1pm.

**Australian Geranium Society Spring Show
'THE GOOD OLD DAYS'**

**St. Andrew's Church of England Hall,
Hill Street, Roseville.**

SATURDAY 19TH OCTOBER 11am-6pm Admission 50c
Plants for sale Refreshments available.

The Bowral Tulip Time Festival

"Tulip Time" began in 1958, when a group of concerned citizens, local committees, service, sporting and cultural clubs got together to publicize the town of Bowral. A week long Floral Festival was staged in October that year and a garden competition was held, attracting seventy-nine entries (your editor's garden, though very different then from its present state, won first prize).

The Floral Festival was held most successfully for two years, but lapsed in 1960. In 1961 the Rotary Club of Bowral adopted a project for the beautification of the town by planting thousands of tulip bulbs in the Corbett Gardens. From this developed a Tulip Time Committee of Management which, with the co-operation of local service organizations and the local council, arranged a nine-day festival, which in 1984 attracted 300,000 people to the area, making it the largest festival in New South Wales with the exception of the Festival of Sydney.

This year 45,000 tulip bulbs have been planted in the Corbett Gardens, which, with all the other spring flowers and flowering shrubs will provide a memorable sight for the thousands of visitors. 26,000 brochures have been distributed and even by late May bookings for coach parties were coming in from as far away as North Queensland. Overseas visitors are expected from many countries, including Japan and the U.S.

All proceeds from the Tulip Time Festival are donated to local charities and town improvements.

The Bowral Tulip Time Festival will be held this year from 5th to 13th October. Further information can be obtained from the

Hon. Sec. Tulip Time Committee, PO Box 176, Bowral, 2576, or from the Southern Highlands Tourist Information Centre, telephone (048) 71.1115.

A Garden Nursery on the South Coast at Berry, N.S.W.

The garden was started ten years ago by Keith and Edith Faulks, and over the years a search for something different to plant has gone on, with visits, phone calls, and letters to nurseries in Victoria, South Australia, Tasmania and New South Wales.

As the garden grew it seemed logical to open a nursery specialising in rare and interesting trees and shrubs. The garden grew again and now includes a dwarf conifer garden and an old-fashioned rose section. The total area is now 1.2 hectares (3 acres), the nursery being situated in part of the garden; seats have been placed around for people to sit and relax.

Visitors to the nursery are encouraged to go for a walk through the garden. Start with the little *Alnus glutinosa* "Imperialis", then on past the two *Cupressus glabra* "Hodginsii", making a glorious blue background for *Acer palmatum* "Ozakazuki" in autumn. Then to the rich dark green leaves and orange berries of *Emmenosperma*, to the Fiddlewood (*Citharexylum fruticosum*) with wonderful fragrant flowers, to the golden *Robinia* "Frisia". The newer variegated Pittosporums "Silver Song" and "Sunburst", *Nyssa sylvatica* and *Nyssa sinensis*, plus many others too numerous to mention.

The name of the nursery is Jasper Park Nursery, Croziers Road, Berry; situated approximately 2 km south of Berry on Princes Highway, turn right into Croziers Road and travel 1 km.



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